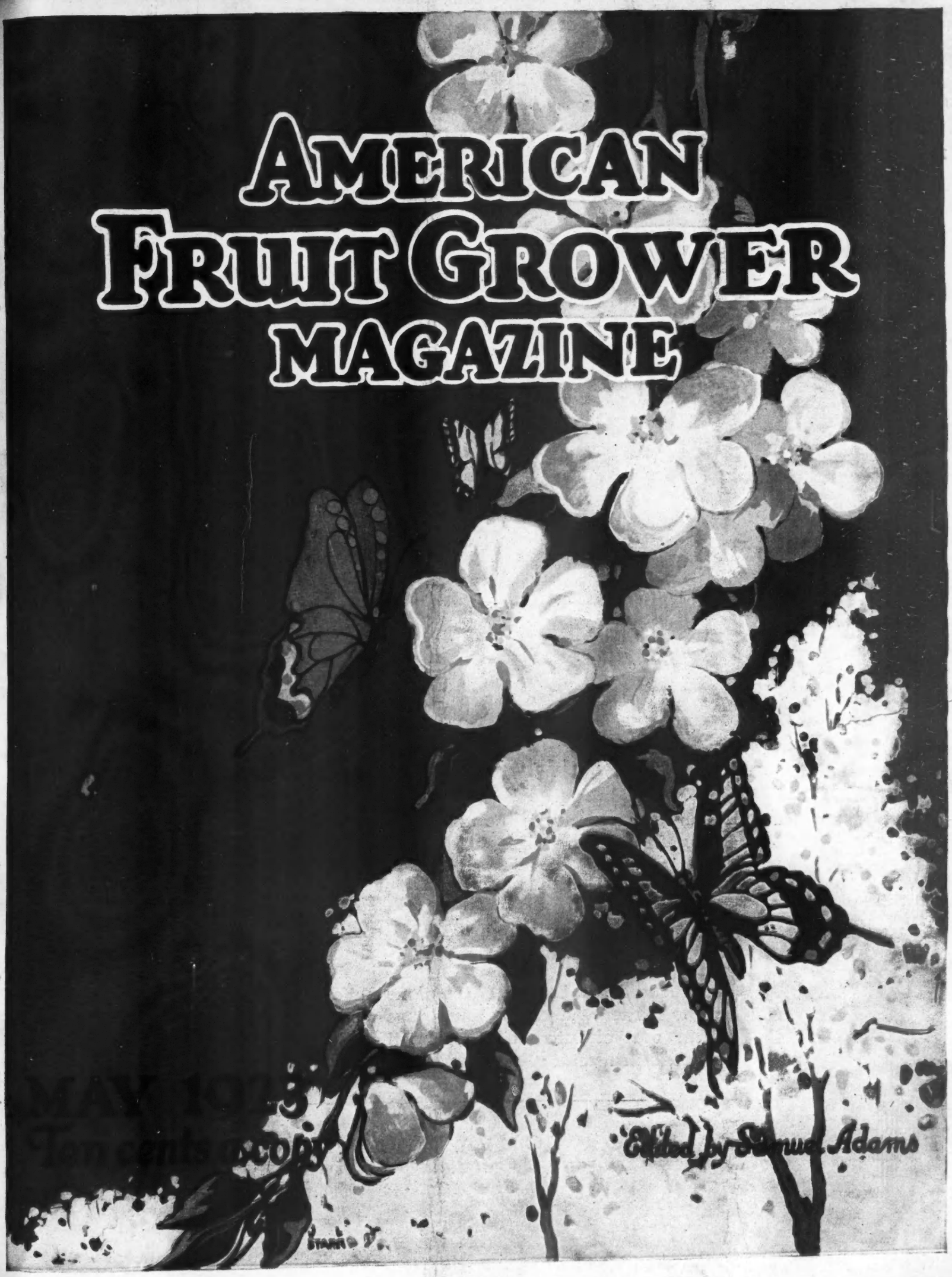
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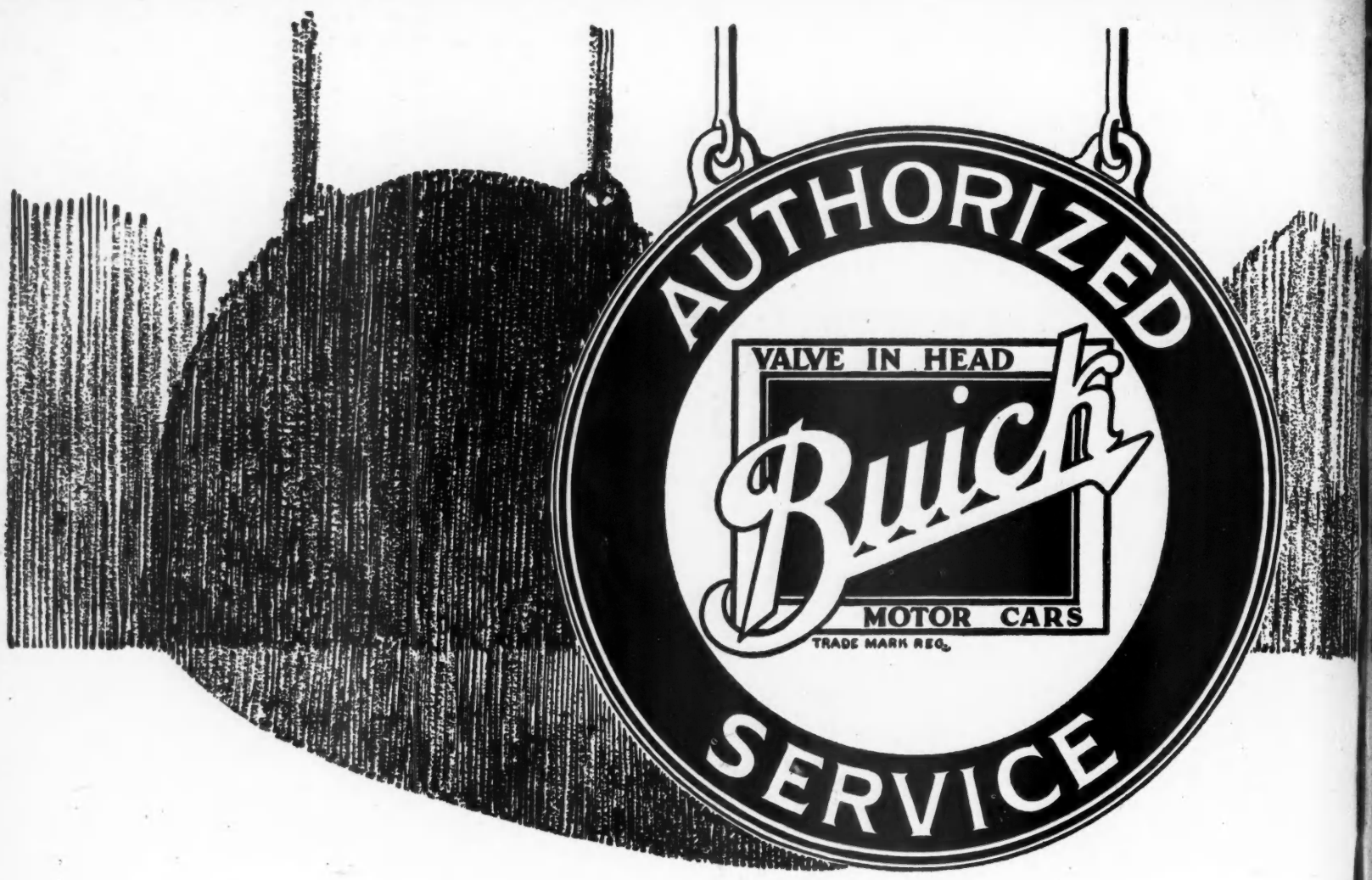
FRUIT GROWER
MAGAZINE
Edited by Samuel Adams



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The Way California Cherries Are Packed

by W. P. Duruz and F. W. Allen

A PRODUCTIVE cherry tree in a good season will produce at least 200 pounds, or 20,000, cherries. Multiply this by 70, the number of trees on an acre, and then multiply the acreage by 200 and the result will be two hundred and eighty million cherries. The F. S. Jones ranch near Cordelia, Calif., which contained a planting of only two acres of cherries thirty years ago, now has 200 acres devoted to sweet cherries. A two-hundred-acre orchard of pears, or peaches, would not be unusual for California, but when it comes to cherries—well, that is certainly different. How is it ever possible to pick such a crop and where and how can they possibly be sold without a great many going to waste?

The writers will admit that they themselves desired information on this seeming impossibility, so a special visit was made to see how the feat was accomplished. The packing season had just started, and as the cool weather had delayed picking somewhat, we arrived on a rather "slack" day. About eight thousand dollars' worth of cherries had been sold that day and there were only about ninety pickers working. In a few days the work would "pick up."

Upon inquiry at the packing house for Mr. Millard Sharpe, General Field Manager, we were informed that he was somewhere in the orchard, probably out with the picking crew.

We had evidently seen a number of the Pickers as we first drove up, but as they all walked with canes we had taken them for rheumatics seeking mud baths. However, when we finally located Mr. Sharpe he likewise carried one of these companions. Now when a big stalwart, 200-pound individual walks around with a cane there must be some reason other than rheumatism, and we found out the reason before we left.

"We have only a small crew on today—only two picking foremen, one with forty men and the other with about fifty," replied Mr. Sharpe to our question as to the number of pickers. "You see we can pick only the ripest fruit this first time over. Probably tomorrow or the next day we shall have to double our present force. The Chapmans, Burbanks and Tartarians will be coming on pretty good now. These will keep us going until the Annes (Napoleon) and Bings are ready for the first picking."

Iron Picking Buckets.

As we went down the row we noticed first of all the little curved galvanized iron picking buckets fastened on to each picker's belt. These little buckets hold only five pounds of cherries, as a larger picking receptacle would cause the fruit to become bruised or mashed. Each bucket bore a number which identified the picker. As these picking buckets were filled they were carefully dumped into a ten-pound pail, which the picker marks with his number. These are then gathered up at short intervals by one of the wagons going through the orchard and hauled to the packing house.

Face view of a packed box, opened for inspection.

Cherries must be picked only when mature, as they do not properly ripen after being removed from the tree. The picking foreman points out to the pickers some of the outstanding differences in varieties in order that they may be able to select the individual fruits for color and proper maturity. Orders are always given to pick the cherries with the stems attached. If these are removed the juice exudes and the fruit quickly deteriorates. Such will also be the case if the fruit is picked while wet.

"Try this cherry," said Mr. Sharpe as he handed us a sample of a beautiful large cherry taken from a tree under which we had just stopped. Now we must confess that we had tried several samples previous to this invitation, but we could only reach the fruit growing on the lower limbs where it was more or less shaded and immature, while, with the aid of the curved handle on the cane, the sample presented to us had been taken from the tip of a branch higher up where the fruit was really ripe. We pronounced it fine, and incidentally congratulated ourselves that we had not been so stupid as to not know the purpose of the curved-handled canes. Closer observation revealed the fact that even though the pickers were provided with tall ladders, yet there were often many limbs the ends of which were just out of reach. These tip ends produce the earliest fruit of all. Rather than getting down and resetting the ladder, the crooked stick brings the fruit to the proper place.

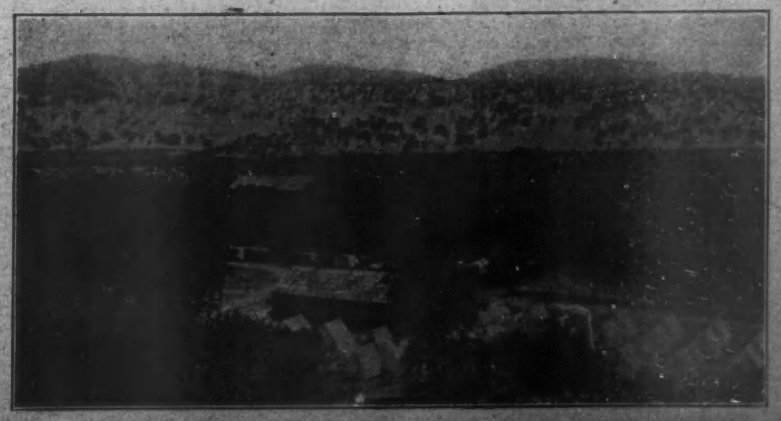
There is probably no other man to be found who can equal Mr. Sharpe when it comes to estimating just how long it should take a certain crew of men to pick a block of trees. Trees, of course, vary widely as to the crop and what percentage should be picked at any one time, but when "Sharkey," as he is generally known, states that that crew of fifty men should finish a certain number of trees day after tomorrow by noon, you can put in your order for dinner at twelve o'clock and you won't keep the cook waiting very long either.

An Ideal Camp.

The call for lunch had just sounded and all hands were heading toward the camp where some prepare their own meals and others eat at the ranch cook house. Located on one edge of the orchard and protected from be-

(*Concluded on page* 12.)

Interior view of packing house showing packers at work.



Part of 200-acre Jones Ranch, showing a section of Tent City.

Fighting Pests by Telephone

by G. E. Smith, New York

ORLEANS County in the famous fruit belt of Western New York, boasts of a spray service saving its fruit growers thousands of dollars yearly. The service work was started in 1918 through the local Farm Bureau with 275 men requesting the work. That number has now increased to about 1000 members.

The local Farm Bureau cooperates with the U. S. Weather Bureau, the New York State Experiment Station at Geneva and the College of Agriculture at Ithaca. A fruit specialist is employed to watch the development of insects and diseases throughout the season, as well as the development of buds and fruit. The rate of development of buds and fruit as well as the development of certain insects varies somewhat throughout the County, depending upon nearness to Lake Ontario, soil, drainage, topography, etc. During some seasons the rate of development of buds and fruit between the northern and southern parts of the County, a distance of 18 miles, is as much as ten to twelve days. Because of such conditions criterion orchards are selected as time indicators for recommendations.

Telephone Saves Time.

It is necessary to reach the growers in a very short time, especially if the weather Bureau sends out a forecast which warns of a storm period within the next two or three days, and conditions are favorable for apple scab dissemination and the telephone is used as a medium of swiftness.

The names of the growers are placed on telephone relay lines and the following system is used: The fruit specialist calls one grower in each section where there is a different telephone exchange or criterion orchard. The latter in turn calls two or three others in the same locality, and each of these men call two or three more and so on. The men in most cases call those on the same line so that it is not necessary to call Central. This work is all prearranged before the first message is sent out so that each man knows who calls him and who he has to call.

It is essential in forming the relays to place good dependable growers as pivot men. In sending out a recommendation to so large a number of growers, it is also necessary to send each grower a code chart to make the messages as simple and short as possible, as such messages are more apt to be sent through correctly. The code chart contains the kind of fruit, the number of the spray, the materials and amount to use, and for what applied. For example, Code A, Code No. 1 might mean to apply the delayed dormant spray to apples.

If a storm period is due within the next two or three days, this is also relayed along with the recommendation. Each telephone message is followed by a "follow up" card to serve as a check for any mistake that might occur.

Growers who have no telephone are placed upon the mail service, but the telephone system has a big advantage, as it will give the growers a day to two days of spraying in advance of the mail service.

Time a Big Factor.

Spraying at the right time is a big factor in controlling insects and diseases. If the time is ripe for an application and a storm period is within sight, a spray message is relayed immediately. All the growers on the telephone relays are reached by twenty-seven calls from the office. On several occasions ninety per cent of the men had received the message within two hours from the time of starting. In one instance during 1922, a message was sent out on all relays early one morning before the growers had begun their day's work, and in less than two hours after the message had been sent the fruit specialist visited a criterion orchard about eighteen miles from the office and saw sixteen spray rigs in operation and three more being repaired.

Field Tests Concluded.

Field tests are carried on in various parts of the County to find out the value of the individual applications against insects and diseases. These tests show the great value of timely applications.

During 1921 and 1922 tests have shown that codling moth injuries have been reduced thirty per cent in orchards where a special codling moth spray has been applied against orchards where it was omitted. Individual growers have stated that they have been saved from fifty dollars up to six hundred dollars by just one timely spray.

In 1920 in five orchards where the sprays were timely as compared to five orchards where sprays were applied "any old time" there was a difference of twenty-six per cent in perfect fruit. This meant a loss in the five orchards of 1,500 barrels of A grade fruit which had to be thrown into lower grades or culls.

Results show that no one particular spray can be recommended year after year in scab control. The following table shows the value of the individual early sprays in scab control during the five years of the spray service in Orleans County:

IMPORTANCE OF EARLY SPRAYS ON APPLES.
Percentage of Scab.

Year.	No delayed dormant.	No preblossom.	No calyx.	Check no spray.	All sprays.
1918...	27.0	53.2	24.6	99.1	16.0
1919...	36.6	25.1	24.1	62.7	1.3
1920...	5.8	1.3	1.9	3.7	0.7
1921...	10.4	5.6	4.1	19.3	1.4
1922...	4.2	4.1	65.5	96.2	3.4

The above table means that one spray in each case was omitted but the remainder applied except on check.

The Western New York Fruit Growers' Co-operative Packing Association consisting of about forty local associations, has made a careful study this past year of the value of the spray service in relation to the quality of the fruit packed. A committee reports that growers in local associations where the spray service was available will receive per barrel, 55c more on Baldwins, tree run, and 33c more on Greenings, tree run, than the local association which did not have the advantage of the spray service. These figures were based on all grades of Baldwin and Greenings.

Figures were also compiled for growers who had made the maximum use of the spray service. The packs of the growers who had made full use of the spray service in each of thirteen local associations showed that these men will average 25c more per barrel tree run on Baldwins and 27c more per barrel, tree run, on Greenings, than the average of all others in their locals who did not use the spray service. Each association packed about 20,000 barrels of fruit the past year.

The spray service intends to give the best up-to-date information at the proper time. It requires the fruit specialist's entire time in the field during the growing season to get this information.

The growing of high quality fruit has come to stay and the standard is being raised each year. It is up to every fruit grower to keep out destructive insects and diseases. This would mean a better neighborly spirit. Fruit growing has reached a point where it means to spray or get out of the game. An unsprayed orchard is a menace to any community.

Fruit growing is a big game and means fight from the word "Go," but when growers can pull through a season as 1922 has been, with plenty of insects and diseases to fight, and come through with apples that pack 80 to 90 per cent A grade fruit, it shows the fight can be won, no matter how severe it may be.

Opportunity for Others

Managing Editor's Note: This article by G. E. Smith shows one way of increasing the percentage of merchantable fruit per acre and at the same time shows how to swat the cull. This is a program which should appeal to every up-to-date orchardist and to every live fruit community. Some progress along these lines has been made in the states of Washington and Colorado. Will it not pay you to organize your community so that you may fight pests just as effectively as does Orleans County, New York? Let us all pull together and make 1923 a real quality year in fruit production in every horticultural district.

English Fruit Consumption

by A. G. B. Bouquet

Oregon Agricultural College

ONE phase of the marketing of fruit in the British Isles that is noticeable to the American traveler is that of the comparatively small consumption of fruit by the average British family, likewise by guests at hotels.

Take for example the British breakfast. It is usually a stereotyped one and quite heavy, consisting of porridge (oatmeal), fish, bacon and eggs, toast, marmalade, tea or coffee. In that menu the only thing that helps the fruit grower is the marmalade which affects the sale of oranges in regions outside of the British Isles where they are grown. Some home manufactured jam may be found as well as the marmalade but the latter is the standard preserve on the average breakfast table.

Fruit for breakfast either raw or cooked is practically an unknown quantity. It is never mentioned in the private home as a rule, and seldom listed in hotel menus. At some hostelries one is offered a "compote" of fruit at a cost of twenty-five to thirty-five cents added to the regular price of the meal. At one hotel visited by the writer the compote of fruit was brought in six small individual dishes containing respectively stewed gooseberries, strawberries, cherries, greengages, raspberries and rhubarb. One could partake of all of these collectively or individually. The average British breakfast is a table d'hote affair costing at the ordinary good hotel not less than seventy-five to ninety cents it can readily be understood that the fruit with its extra charge is not extremely popular and therefore not widely consumed. In some hotels no fruit of any kind is mentioned.

Again in the consumption of fruit served at other meals there is a general custom of serving custards, blanc manges and puddings with the fruit, thus possibly cutting down the consumption of the latter to one-half of what it might be were the custards, etc., eliminated. For examples, a compote of "prunes and custard," "apples and custard," "greengages and blanc mange," "stewed pears with rice cake" show the general manner in which some kind of food other than the fruit accompanies it.

The term "fruit salad" in England is very different from the American fruit salad served on the lettuce leaf with appropriate dressing. The British salad is merely a combination of fruits served as the dessert dish instead of the salad served with the fruit salads as served by citizens of the U. S. A."

Fruit jams receive probably more advertising than the fresh fruit itself. Daily newspapers, store windows, railway trains, "tubes" and busses carry various forms of advertising matter relative to the new jams of the season—strawberry, plum, greengage, gooseberry, red and black currant, which are eaten once a day, namely, at afternoon tea.

Fruits which are comparatively cheap during the season are plums, gooseberries, currants and sometimes strawberries. Plums in 1922 were selling at four and five cents a pound retail, with the lowest price of the season at 32 cents for a 28-pound "strike" wholesale price for jam making. Raspberries, however, were contracted for by jam makers at a price of $375-$400 per ton during July. Strawberries sold as low as 6 cents per lb. retail and as high as 75 cents to a dollar for a 1½ to 4-lb. basket.

Gooseberries moved at eight to twelve cents per pound, while cherries brought 11 cents ate in June and later ten cents.

One manner in which fruit is encouraged for consumption is in the selling from small push stands on the main streets of the larger cities, in which case one can often purchase good fruit at a considerably cheaper price than elsewhere. Public markets and open city markets of the ancient type still prevail in many places and these undoubtedly dispose of large quantities of fruit at a price which is attractive to the buyer.

An interesting sidelight on the consumption of fruit in Europe is the stereotyped use by the Swiss hotelkeepers of jam which is exclusively served for breakfast and in some rare cases for afternoon tea. The so-called "comfiture," which is jam made from black cherries or red currants, is served as part of the comparatively scant breakfast of rolls, butter, "comfiture" and coffee. Ripe wild strawberries, wild raspberries and wild currants are gathered in the mountainous valleys by the rural people and fine jam is made of these fruits.

The French folk are even lesser consumers of fruits than the Swiss as the rolls and coffee comprise the entire breakfast without even the "comfiture."

American fruit growers have a great opportunity to expand the European market by advertising coupled

Fruit Auctions Making Rapid Growth

by C. Moran

THE auction is on! The golden products of California and Florida are about to be sold to the highest bidders. The auctioneer calls out a number on the catalog and the bidding starts. A hand raised here and there boosts the price, the hammer falls, a sale is completed. Throughout the day the sale continues until all the products on the pier below are sold.

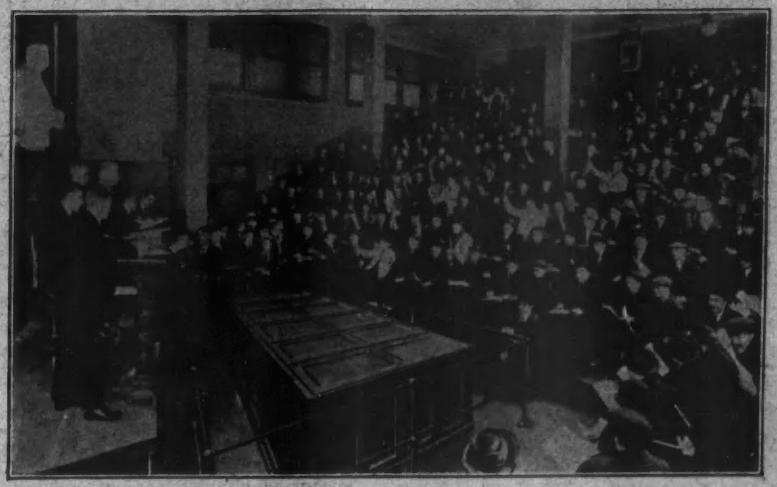
The auction sales method of marketing fruits has made tremendous growth during the past ten years. The volume of business handled has increased from $42,000,000 in 1912 to $148,000,000 in 1922. Fully 25 per cent of the domestic citrus fruit crop is now sold by the auction method. Domestic citrus and deciduous fruits comprise the bulk of the commodities handled, but the entire list covers 70 different products, from alligator pears to walnuts.

Twenty-one auction companies now operate in 14 cities, chiefly in the Northeastern section of the United States. Of these companies 8 are controlled by interests outside the fruit and vegetable trade; 13 are controlled by members in the trade. The organizations are located at New York, Philadelphia, Boston, Chicago, Pittsburgh, St. Louis, Cleveland, Cincinnati, Baltimore, New Orleans, Detroit, Newark, Minneapolis and St. Paul. They serve 47 per cent of the urban population living in cities of 8,000 inhabitants or over, 58 per cent of the population in cities of 25,000 and over, and 80 per cent of the population in cities of 100,000 and over. Fully 90 per cent of the buying trade is usually represented at the sales.

History of Auction.

The auction method was first applied to the marketing of agricultural products in the United States in 1827. This was the sale of a shipment of Malaga grapes from Spain. Other auction sales of imported products were subsequently held at intermittent intervals, and by 1839 the system had become a regular marketing medium for imported products, particularly for foreign lemons which needed to be sold quickly upon arrival to prevent market gluts. Domestic fruits did not enter the field to any appreciable extent until 1885, when Florida oranges appeared in the auction rooms. Here again, the system was employed to prevent market gluts because of large quantities arriving in the market. The first auction sales of California deciduous fruits were held in New York in 1887, as a result of the large quantities arriving in Eastern markets following the development of the refrigerator car. From that time forward the business in domestic products has steadily increased until now the bulk of the auction trade comes from this source.

Nearly 45 per cent of all agricultural products sold at auction in the United States are marketed through the four major auction companies in New York, which did a business aggregating $66,000,000 in 1921. These companies sell more than 95 per cent of all California deciduous fruits marketed in New York, nearly 90 per cent of the California citrus fruits, approximately 85 per cent of all Florida fruits, more than 95 per cent of all foreign fruits, and 60 per cent of the arrivals of boxed apples. More than 50 per cent of the annual carlot supplies of 50,000 cars of fruits and vegetables arriving in New York are sold at auction.



Typical auction sales room in New York City.

Sales through the two auction companies at Boston aggregated $16,000,000 in 1921; through the two auction companies at Philadelphia nearly $18,000,000, and through the two companies at Chicago around $12,000,000. The combined auction business in the four cities has increased more than 100 per cent since 1917.

Numerous factors have operated to cause this greatly increased business. Chief among them is the development of large scale marketing by both cooperative organizations and independent operators. The auction offers a quick sales medium, and with large volumes of perishable or semi-perishable products coming on the market daily, speed in the sale of the goods is an important consideration. The auction concentrates a large volume of products in one place and inevitably attracts a congress of buyers drawn from all classes of the trade. The widest publicity is given the sales, all commodities are sold the same day they are put up, and there is a rapid turnover.

Approximately 80 per cent of the supplies sold at auction are obtained through salaried representatives of large marketing organizations or from so-called auction receivers who work on a commission basis for shippers. The remainder of the supply comes from private exchanges and shipping organizations, commission merchants, carlot wholesalers, and brokers. Jobbers purchase approximately 45 per cent of the commodities sold, the remainder being bought by brokers, wholesale grocers, and retail distributors.

Quick Sale Method.

Where marketing success depends upon the quick sale of a product because of its perishability or the volume of movement to avoid market gluts, shippers prefer the auction system regardless of any slight difference there may be in marketing cost or the price realized. On the other hand some shippers who are in a more favorable position to hold their product as dictated by market conditions may sell either at auction or at private sale. The experience of many large shippers is that on a rising market with buyers bidding against one another for supplies, the higher prices may be realized through the auction, but that on a declining market private sales may produce the better prices, by reason of the individual salesmanship brought into play.

Those who are strongly in favor of the auction system (indeed there are many enthusiasts who believe that it may eventually replace altogether the private sales method) assert that it places the sale of commodities on a true supply and demand basis, and by securing 90 per cent of the buying trade makes for the shortest marketing route. On the other hand, critics of the system hold that the auction is an additional link in the chain of marketing as it occupies a place between the receiver in the market and the jobber or other agency which in private deals purchases from the receiver direct. In either case, it is agreed that the system is not for small shippers, as only a carefully graded and packed product under recognized brand and which is available in large, regular supply brings the best prices. An "auction commodity" is defined as any commodity of which 15 to 25 per cent of the supply arriving in the terminal market is sold at auction, or any specialized commodity grown in a limited or sectional area for which there is an interstate demand sup-

(Concluded on page 19)

The Blackberry Industry at Lindale

by E. A. Miller, Texas

THE little town of Lindale, in Smith County, Texas, has become noted for its rapidly growing blackberry industry, and for its large output and shipments of both the canned and fresh berries.

There are approximately 4,000 acres of blackberries in the county and of this acreage, at least 3,000 are in the vicinity of Lindale. At this place, the blackberry industry has become of great commercial importance, and it now ranks as probably the leading blackberry canning and shipping point in the entire country.

This industry started a little over twenty years ago, and has made a steady growth ever since, with an exceedingly rapid growth the last few years. The first canning factory was established in 1898. Since then, two more factories have been built. The full capacity of these factories runs from 60,000 to 75,000 number two cans per day.

The blackberry growers usually make a contract for their crop with the canners and the canners in turn contract with the distributors before canning. The growers this year received around three cents per pound for the berries. During 1922 about 75 per cent of the crop was canned and the rest was shipped fresh. Previous to this year, more than 75 per cases canned, amounting to 80 cars, the cars holding from 800 to 1,000 cases, and there are 28 number two cans to a case. Including the shipments of fresh berries there were about 100 cars shipped from Lindale alone and 25 cars more from other points in the county. In addition to the berries, sweet potatoes are also canned in large quantities.

Picking the Berries.

During the picking and canning season, Lindale and vicinity present a busy sight. Hundreds of pickers and also some of the canning help are imported from surrounding places. They are mostly women and children, and they live in tents or houses built for the purpose during the picking season. At the time of harvesting, the weather is warm and the tents are quite comfortable. The picking and canning season lasts about six weeks and this is a very busy time. The pickers are paid around nine cents a gallon or forty cents a crate.

Establishing the Patch.

The Lawton and McDonald varieties are grown almost exclusively. About 80 per cent of the crop consists of the Lawton variety, which is used nearly altogether for canning purposes and 20 per cent consists of the McDonald variety which is used mostly for shipping fresh. The McDonald is not so good for canning as the Lawton, but is a good shipper.

The planting is usually done in February, just after shearing on the old patches. They are planted in rows 10 feet apart and the plants are set two to three feet apart in the rows. Eight inch slips are usually used for planting. A furrow is opened up with a plow and the slips are dropped in and then covered. It takes about 200 plants per acre and they sell from $2.50 to $3.00 per thousand.

The plants are fertilized with about

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by G. E. Smith, New York

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Field tests are carried on in various parts of the County to find out the value of the individual applications against insects and diseases. These tests show the great value of timely applications.

During 1921 and 1922 tests have shown that codling moth injuries have been reduced thirty per cent in orchards where a special codling moth spray has been applied against orchards where it was omitted. Individual growers have stated that they have been saved from fifty dollars up to six hundred dollars by just one timely spray.

In 1920 in five orchards where the sprays were timely as compared to five orchards where sprays were applied "any old time" there was a difference of twenty-six per cent in perfect fruit. This meant a loss in the five orchards of 1,500 barrels of A grade fruit which had to be thrown into lower grades or culls.

Results show that no one particular spray can be recommended year after year in scab control. The following table shows the value of the individual early sprays in scab control during the five years of the spray service in Orleans County:

IMPORTANCE OF EARLY SPRAYS ON APPLES.

Percentage of Scab.

Year.	No delayed dormant.	No pre-blossom.	No calyx.	Check no spray.	All sprays.
1918...	27.0	53.2	24.6	99.1	16.0
1919...	36.6	25.1	24.1	62.7	1.3
1920...	5.3	1.3	1.9	3.7	0.7
1921...	10.4	5.6	4.1	19.3	1.4
1922...	4.2	4.1	65.5	98.2	3.4

The above table means that one spray in each case was omitted but the remainder applied except on check.

The Western New York Fruit Growers' Co-operative Packing Association consisting of about forty local associations, has made a careful study this past year of the value of the spray service in relation to the quality of the fruit packed. A committee reports that growers in local associations where the spray service was available will receive per barrel, 55c more on Baldwins, tree run, and 33c more on Greenings, tree run, than the local association which did not have the advantage of the spray service. These figures were based on all grades of Baldwin and Greenings.

Figures were also compiled for growers who had made the maximum use of the spray service. The packs of the growers who had made full use of the spray service in each of thirteen local associations showed that these men will average 25c more per barrel tree run on Baldwins and 27c more per barrel, tree run, on Greenings, than the average of all others in their locals who did not use the spray service. Each association packed about 20,000 barrels of fruit the past year.

The spray service intends to give the best up-to-date information at the proper time. It requires the fruit specialist's entire time in the field during the growing season to get this information.

The growing of high quality fruit has come to stay and the standard is being raised each year. It is up to every fruit grower to keep out destructive insects and diseases. This would mean a better neighborly spirit. Fruit growing has reached a point where it means to spray or get out of the game. An unsprayed orchard is a menace to any community.

Fruit growing is a big game and means fight from the word "Go," but when growers can pull through a season as 1922 has been, with plenty of insects and diseases to fight, and come through with apples that pack 80 to 90 per cent A grade fruit, it shows the fight can be won, no matter how severe it may be.

Opportunity for Others

Managing Editor's Note: This article by G. E. Smith shows one way of increasing the percentage of merchantable fruit per acre and at the same time shows how to swat the cull. This is a program which should appeal to every up-to-date orchardist and to every live fruit community. Some progress along these lines has been made in the states of Washington and Colorado. Will it not pay you to organize your community so that you may fight pests just as effectively as does Orleans County, New York? Let us all pull together and make 1923 a real quality year in fruit production in every horticultural district.

English Fruit Consumption

by A. G. B. Bouquet

Oregon Agricultural College

ONE phase of the marketing of fruit in the British Isles that is noticeable to the American traveler is that of the comparatively small consumption of fruit by the average British family, likewise by guests at hotels.

Take for example the British breakfast. It is usually a stereotyped one and quite heavy, consisting of porridge (oatmeal), fish, bacon and eggs, toast, marmalade, tea or coffee. In that menu the only thing that helps the fruit grower is the marmalade which affects the sale of oranges in regions outside of the British Isles where they are grown. Some home manufactured jam may be found as well as the marmalade but the latter is the standard preserve on the average breakfast table.

Fruit for breakfast either raw or cooked is practically an unknown quantity. It is never mentioned in the private home as a rule, and seldom listed in hotel menus. At some hosteiries one is offered a "compote" of fruit at a cost of twenty-five to thirty-five cents added to the regular price of the meal. At one hotel visited by the writer the compote of fruit was brought in six small individual dishes containing respectively stewed gooseberries, strawberries, cherries, greengages, raspberries and rhubarb. One could partake of all of these collectively or singly or any way desired; the price was inclusive no matter how small or large the serving.

Considering the fact that the average British breakfast is a table d'hote affair costing at the ordinary good hotel not less than seventy-five to ninety cents it can readily be understood that the fruit with its extra charge is not extremely popular and therefore not widely consumed. In some hotels no fruit of any kind is mentioned.

Again in the consumption of fruit served at other meals there is a general custom of serving custards, blanc manges and puddings with the fruit, thus possibly cutting down the consumption of the latter to one-half of what it might be were the custards, etc., eliminated. For examples, a compote of "prunes and custard," "apples and custard," "greengages and blanc mange," "stewed pears with rice cake" show the general manner in which some kind of food other than the fruit accompanies it.

The term "fruit salad" in England is very different from the American fruit salad served on the lettuce leaf with appropriate dressing. The British salad is merely a combination of fruits served as the dessert dish instead of the salad served with the meat course in this country. A recent article in one of the widest circulated London newspapers called attention to the "very attractive and tasteful fruit salads as served by citizens of the U. S. A."

Fruit jams receive probably more advertising than the fresh fruit itself. Daily newspapers, store windows, railway trains, "tubes" and busses carry various forms of advertising matter relative to the new jams of the season—strawberry, plum, greengage, gooseberry, red and black currant, which are eaten once a day, namely, at afternoon tea.

Fruits which are comparatively cheap during the season are plums, gooseberries, currants and sometimes strawberries. Plums in 1922 were selling at four and five cents a pound retail, with the lowest price of the season at 32 cents for a 28-pound "strike" wholesale price for jam making. Raspberries, however, were contracted for by jam makers at a price of $375-$400 per ton during July. Strawberries sold as low as 8 cents per lb. retail and as high as 75 cents to a dollar for a 3½ to 4-lb. basket.

Gooseberries moved at eight to twelve cents per pound, while cherries brought 31 cents late in June and later ten cents.

The half a cantaloupe for the American's breakfast was not prevalent in England with hothouse melons bringing 75 cents each on July 6.

One manner in which fruit is encouraged for consumption is in the selling from small push stands on the main streets of the larger cities, in which case one can often purchase good fruit at a considerably cheaper price than elsewhere. Public markets and open city markets of the ancient type still prevail in many places and these undoubtedly dispose of large quantities of fruit at a price which is attractive to the buyer.

An interesting sidelight on the consumption of fruit in Europe is the stereotyped use by the Swiss hotelkeepers of jam which is exclusively served for breakfast and in some rare cases for afternoon tea. The so-called "comfiture," which is jam made from black cherries or red currants, is served as part of the comparatively scant breakfast of rolls, butter, "comfiture" and coffee. Ripe wild strawberries, wild raspberries and wild currants are gathered in the mountainous valleys by the rural people and fine jam is made of these fruits.

The French folk are even lesser consumers of fruits than the Swiss as the rolls and coffee comprise the entire breakfast without even the "comfiture."

American fruit growers have a great opoprtunitly to expand the European market by advertising coupled with a campaign of education and publicity, in much the same way as The Sun-Maid Raisin Growers are operating.

Fruit Auctions Making Rapid Growth

by C. Moran

THE auction is on! The golden products of California and Florida are about to be sold to the highest bidders. The auctioneer calls out a number on the catalog and the bidding starts. A hand raised here and there boosts the price, the hammer falls, a sale is completed. Throughout the day the sale continues until all the products on the pier below are sold.

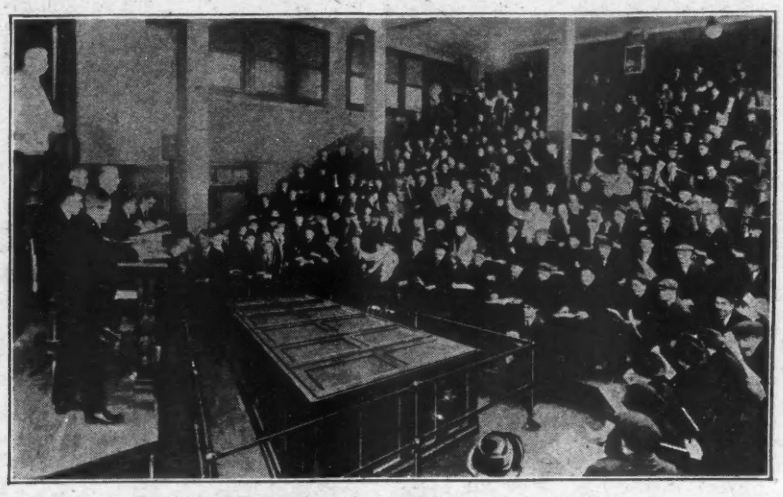
The auction sales method of marketing fruits has made tremendous growth during the past ten years. The volume of business handled has increased from $42,000,000 in 1912 to $148,000,000 in 1922. Fully 25 per cent of the domestic citrus fruit crop is now sold by the auction method. Domestic citrus and deciduous fruits comprise the bulk of the commodities handled, but the entire list covers 70 different products, from alligator pears to walnuts.

Twenty-one auction companies now operate in 14 cities, chiefly in the Northeastern section of the United States. Of these companies 8 are controlled by interests outside the fruit and vegetable trade; 13 are controlled by members in the trade. The organizations are located at New York, Philadelphia, Boston, Chicago, Pittsburgh, St. Louis, Cleveland, Cincinnati, Baltimore, New Orleans, Detroit, Newark, Minneapolis and St. Paul. They serve 47 per cent of the urban population living in cities of 8,000 inhabitants or over, 58 per cent of the population in cities of 25,000 and over, and 80 per cent of the population in cities of 100,000 and over. Fully 90 per cent of the buying trade is usually represented at the sales.

History of Auction.

The auction method was first applied to the marketing of agricultural products in the United States in 1827. This was the sale of a shipment of Malaga grapes from Spain. Other auction sales of imported products were subsequently held at intermittent intervals, and by 1839 the system had become a regular marketing medium for imported products, particularly for foreign lemons which needed to be sold quickly upon arrival to prevent market gluts. Domestic fruits did not enter the field to any appreciable extent until 1885, when Florida oranges appeared in the auction rooms. Here again, the system was employed to prevent market gluts because of large quantities arriving in the market. The first auction sales of California deciduous fruits were held in New York in 1887, as a result of the large quantities arriving in Eastern markets following the development of the refrigerator car. From that time forward the business in domestic products has steadily increased until now the bulk of the auction trade comes from this source.

Nearly 45 per cent of all agricultural products sold at auction in the United States are marketed through the four major auction companies in New York, which did a business aggregating $66,000,000 in 1921. These companies sell more than 95 per cent of all California deciduous fruits marketed in New York, nearly 90 per cent of the California citrus fruits, approximately 85 per cent of all Florida fruits, more than 95 per cent of all foreign fruits, and 60 per cent of the arrivals of boxed apples. More than 50 per cent of the annual carlot supplies of 50,000 cars of fruits and vegetables arriving in New York are sold at auction.



Typical auction sales room in New York City.

Sales through the two auction companies at Boston aggregated $16,000,000 in 1921; through the two auction companies at Philadelphia nearly $18,000,000, and through the two companies at Chicago around $12,000,000. The combined auction business in the four cities has increased more than 100 per cent since 1917.

Numerous factors have operated to cause this greatly increased business. Chief among them is the development of large scale marketing by both cooperative organizations and independent operators. The auction offers a quick sales medium, and with large volumes of perishable or semi-perishable products coming on the market daily, speed in the sale of the goods is an important consideration. The auction concentrates a large volume of products in one place and inevitably attracts a congress of buyers drawn from all classes of the trade. The widest publicity is given the sales, all commodities are sold the same day they are put up, and there is a rapid turnover.

Approximately 80 per cent of the supplies sold at auction are obtained through salaried representatives of large marketing organizations or from so-called auction receivers who work on a commission basis for shippers. The remainder of the supply comes from private exchanges and shipping organizations, commission merchants, carlot wholesalers, and brokers. Jobbers purchase approximately 45 per cent of the commodities sold, the remainder being bought by brokers, wholesale grocers, and retail distributors.

Quick Sale Method.

Where marketing success depends upon the quick sale of a product because of its perishability or the volume of movement to avoid market gluts, shippers prefer the auction system regardless of any slight difference there may be in marketing cost or the price realized. On the other hand some shippers who are in a more favorable position to hold their product as dictated by market conditions may sell either at auction or at private sale. The experience of many large shippers is that on a rising market with buyers bidding against one another for supplies, the higher prices may be realized through the auction, but that on a declining market private sales may produce the better prices, by reason of the individual salesmanship brought into play.

Those who are strongly in favor of the auction system (indeed there are many enthusiasts who believe that it may eventually replace altogether the private sales method) assert that it places the sale of commodities on a true supply and demand basis, and by securing 90 per cent of the buying trade makes for the shortest marketing route. On the other hand, critics of the system hold that the auction is an additional link in the chain of marketing as it occupies a place between the receiver in the market and the jobber or other agency which in private deals purchases from the receiver direct. In either case, it is agreed that the system is not for small shippers, as only a carefully graded and packed product under recognized brand and which is available in large, regular supply brings the best prices. An "auction commodity" is defined as any commodity of which 15 to 25 per cent of the supply arriving in the terminal market is sold at auction, or any specialized commodity grown in a limited or sectional area for which there is an interstate demand sup-

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The Blackberry Industry at Lindale

by E. A. Miller, Texas

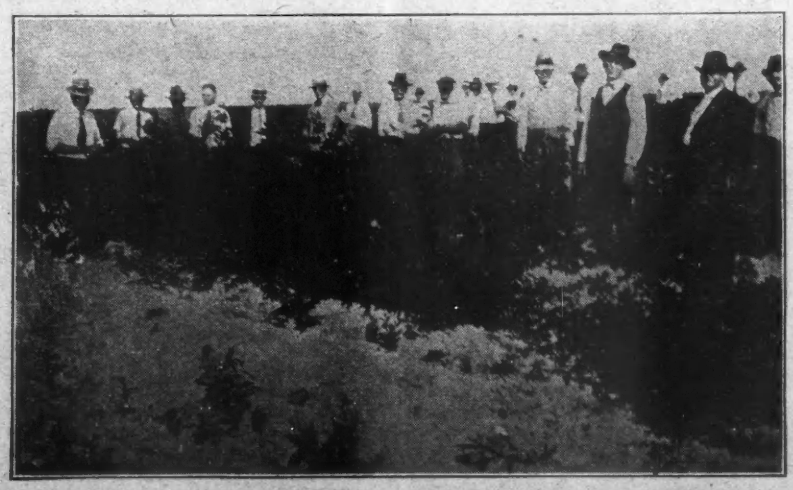
THE little town of Lindale, in Smith County, Texas, has become noted for its rapidly growing blackberry industry, and for its large output and shipments of both the canned and fresh berries.

There are approximately 4,000 acres of blackberries in the county and of this acreage, at least 3,000 are in the vicinity of Lindale. At this place, the blackberry industry has become of great commercial importance, and it now ranks as probably the leading blackberry canning and shipping point in the entire country.

This industry started a little over twenty years ago, and has made a steady growth ever since, with an exceedingly rapid growth the last few years. The first canning factory was established in 1898. Since then, two more factories have been built. The full capacity of these factories runs from 60,000 to 75,000 number two cans per day.

The blackberry growers usually make a contract for their crop with the canners and the canners in turn contract with the distributors before canning. The growers this year received around three cents per pound for the berries. During 1922 about 75 per cent of the crop was canned and the rest was shipped fresh. Previous to this year, more than 75 per cent of the crop was canned.

In 1922, there were about 70,000 cases canned, amounting to 80 cars, the cars holding from 800 to 1,000 cases, and there are 28 number two cans to a case. Including the shipments of fresh berries there were about 100 cars shipped from Lindale alone and 25 cars more from other points in the county. In addition to the berries, sweet potatoes are also canned in large quantities.



Extension service field meeting at blackberry field in Lindale, Texas.

Picking the Berries.

During the picking and canning season, Lindale and vicinity present a busy sight. Hundreds of pickers and also some of the canning help are imported from surrounding places. They are mostly women and children, and they live in tents or houses built for the purpose during the picking season. At the time of harvesting, the weather is warm and the tents are quite comfortable. The picking and canning season lasts about six weeks and this is a very busy time. The pickers are paid around nine cents a gallon or forty cents a crate.

Establishing the Patch.

The Lawton and McDonald varieties are grown almost exclusively. About 80 per cent of the crop consists of the Lawton variety, which is used nearly altogether for canning purposes and 20 per cent consists of the McDonald variety which is used mostly for shipping fresh. The McDonald is not as good for canning as the Lawton, but is a good shipper.

The planting is usually done in February, just after cleaning up the old patches. They are planted in rows 10 feet apart and the plants are set two to three feet apart in the rows. Eight inch roots are mostly used for planting. A furrow is opened up with a plow and the roots are dropped in and then covered. It takes about 200 plants per acre and they sell from $2.50 to $3.00 per thousand.

The plants are fertilized with about 300 pounds per acre of commercial

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Michigan Fruit Handling Plants

by Roy E. Marshall
Michigan Agricultural College

MOST Michigan co-operative fruit handling plants started with a very modest investment and were later enlarged to meet the demand. A building large enough to accommodate the fruit of the charter members was usually purchased and remodeled or built, but as the tonnage of fruit increased either through an increase in membership or acreage, the exchanges found it advisable to enlarge the packing houses and, furthermore, to erect additional buildings and equipment for canning and storing the crops. Fortunately, most of the exchanges had purchased more land than was immediately needed, but even then some of the larger ones have found it necessary to build on all the available land and have crowded the buildings together in such a manner that the most efficient fruit handling is not possible. Again, packing house equipment and methods of handling the fruit have been improved so frequently during the past few years that houses formerly well suited to their purposes have required alterations from time to time to accommodate the improved machinery as well as a larger quantity of fruit. This accounts for the more or less rambling sets of buildings sometimes seen about the exchanges in the principal shipping centers. If these exchanges could start all over again, their buildings would be better placed with reference to one another and would be arranged for more efficient fruit handling.

The younger organizations should profit by the experiences of the older ones and secure title to considerably more land adjacent to a railroad than will be needed for the erection of packing houses, canning factories, cold storage and precooling plants and supply warehouses, allowing considerable for expansion in membership and acreage because ambitious plans are sometimes realized long before anticipated. It may be several years before anything but the packing house becomes a reality and the canning factory may never be built but the plans should be made with each in mind. The site for the buildings should be studied carefully before a single building is erected so as to make it possible to receive the fruit at the packing house, at the precooler or cold storage, at the canning factory, or at the car door direct from trucks and wagons and, furthermore, that after leaving the sizing machines the fruit may be moved to the storage rooms and the canning stock to the canning factory with the least possible effort or expense.

Necessary Capacity.

A packing house should be large enough to take care of the maximum crops of the acreage it is expected to serve. There should be stacking space for about two days' supply of orchard run fruit during the busiest week of the season so as to keep the packing crew in operation during weather unsuited to picking. Unless there are cold storage rooms operated in connection with the handling plant, there should be sufficient space to stack up to three days' output of packed fruit during periods of car shortage. Most of the better sizing machines can be relied on to handle 30 to 40 or more cars of apples during the season. Such machines should have an operating area of at least 20 feet in width; the length necessary for operation may vary from 20 to 30 or more feet, depending on the type. As a guide, it might be stated that for each sizing machine that is to be operated throughout the season at full capacity there should be provided some 2,500 square feet of floor space. There are, however, a number of factors which might warrant a material reduction or increase the amount of space suggested.

Floor Level and Form of Room.

In some of the barreling sections there was considerable interest manifested three or four years ago in building packing houses with two or three floor levels, the second and third floors being 18 and 30 inches respectively above the main packing floor, the idea being to utilize gravity to as great an extent as possible in handling the fruit. Experience has shown, however, that one floor level is more practical and economical of space. This floor should be at a height to make it level with auto truck bodies or railroad car floors.

The packing house should be of such form that the fruit may be kept moving in one direction in its progress from the unloading platform at one end of the house to the storages or car door at the other. Moving the fruit back and forth across the house makes for confusion, is expensive and tends to delay the movement.

Good Light Essential.

Ample provision should be made for good light. Shadows should be avoided, especially at the sorting tables or belts. Furthermore, the glare of direct lighting is nearly as bad as dim lighting. For houses that are not more than 40 feet in width, continuous windows, four feet high and with the bottom of the sash five feet above the floor, along the two sides of the building should provide good light. If the packing house is wider than 40 feet, running the sizing machines crosswise of the room will provide better light for the sorters and packers. Skylights or saw-toothed roof construction built to furnish north light should be provided over the portions used for grading and packing if satisfactory side light is not possible. However, this is not possible with buildings of more than one story unless the second story covers only half the width of the ground floor, in which case the roof covering the packing floor may be given such a pitch as will enable light to be directed through skylights to any part of the packing room. In cases of two-story buildings light shafts or wells are sometimes constructed for the benefit of the sorters and packers. Artificial lights should be provided for use on dark days but they are not nearly as satisfactory as natural light. They should be shaded in such a manner as to prevent glare.

Two-story buildings are usually desirable as they furnish a second floor for the storage of the empty containers and other supplies. This permits lowering the empties to the main floor by means of chutes or other devices and keeps them from occupying the more valuable main floor space.

Facing and covering baskets of apples in Fennville Fruit Exchange.

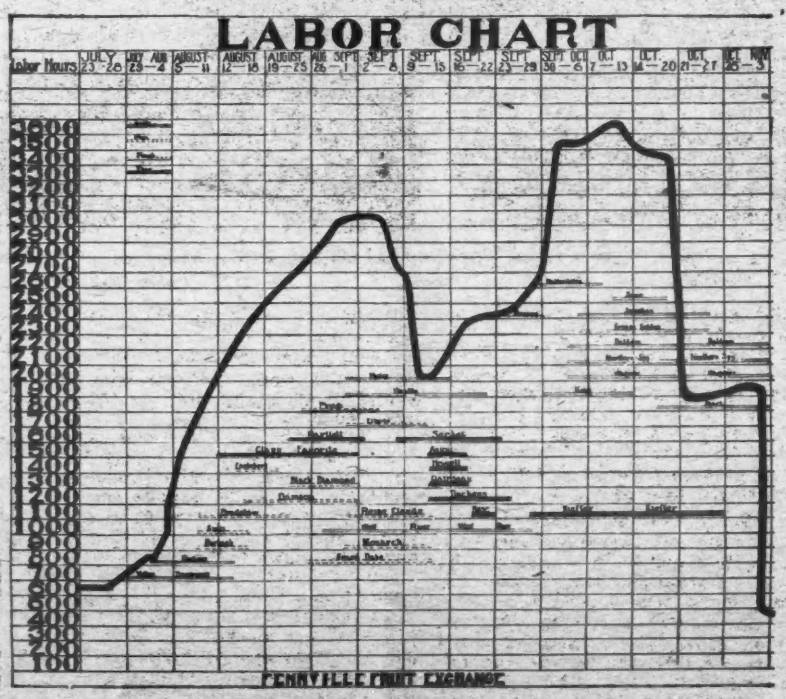


Chart showing number of labor hours employed per week.

Inquiries regarding the advisability of an air-cooled or common storage room in connection with the packing house are frequent. The average daily minimum temperatures during the packing season are so high that such a storage is of little value, unless the fruit is to be held for several months. Even then mechanical refrigeration is the most practical for most fruit exchanges. Storage of packed fruit on the floor of the packing house or in basements should seldom be for more than two or three days or until suitable carloads can be made up.

Provision for Culls.

Some provision should be made to remove the cider and canning stock from the packing floor as soon as it is sorted out. It is usually feasible to construct bins in the basement into which this fruit may be conveyed by gravity through chutes. Then as it accumulates it may be moved to the proper handling plant. By elevators and chain conveyors this fruit may be delivered to the proper building with a minimum of effort, but overhead conveyors should not be installed if other practical methods can be used, because they obstruct the light and are apt to be noisy.

Sizing Machines.

Sizing machines have been developed wonderfully during the past decade. There are now five or six makes of machines suitable for handling the deciduous fruits of the middle western and eastern states. Some of these machines size the fruits according to weight, the others are designed to size according to the transverse diameter of the fruits. The former type is the most accurate and will size any kind of tree fruit but they are also more expensive. At least one machine of this type is in use and giving satisfaction in Michigan. Unless the weighing or gravity type of machine is adopted, packing houses should be equipped with one make of machine for sizing peaches and pears and any one of three or four others for sizing apples, because the better apple sizing machines are not satisfactory for the other fruits. The most satisfactory machine for peaches and pears, exclusive of the weighing type, consists of rollers with reductions in diameter and wire coil belts to carry the fruit.

Sorting belts should be so constructed or should be of such types as to cause the fruit to turn over and over in its progress. This is sometimes accomplished by the use of an endless chain of revolving wooden rollers. Such equipment is made by some manufacturers of fruit handling machinery. Various devices may be worked out to serve this purpose; in fact, the superintendent of a packing house should be more or less of a mechanical genius who can devise supplementary equipment to cheapen costs of operation or to simplify handling. Elimination of the undersized fruit before it passes over the sorting belts will avoid some duplication of effort.

Modern Conveyors.

The fruit may be transported from one part of the packing house to another by means of conveyor belts, roller conveyors or trucks. Some managers use trucks for most of this work because they simplify keeping each lot of fruit intact; there is less danger of getting one man's fruit confused with others. Belt conveyors can be used only for straight line movements. Roller conveyors are used more extensively and are adapted to a wide range of uses such as making right angle turns and moving the packages by gravity. Most of the manufacturers of roller conveyors also make conveyors for elevating or lowering packages from one level to another—in fact, conveyors suitable for most any type of movement in fruit handling are now available. Some houses use combinations of trucks, belt conveyors and roller conveyors. In several Michigan packing houses trucks are preferred, while in others conveyors are used exclusively. One large packing house in Michigan uses double-deck roller conveyors which extend from the receiving platform, through the stacking space for orchard run fruit, to the sizing machines. Fruit from the grower's truck or wagon is placed on the lower section of the

(*Concluded on page* 27.)

The Present Status of the Walnut in California

by L. D. Batchelor

Citrus Experiment Station, Riverside, Calif.

COMMERCIAL walnut culture commenced in California in 1867 when the late Joseph Sexton of Santa Barbara planted part of a sack of walnuts. These were purchased in San Francisco and were probably imported from Chile. From this original planting have come the hard-shell, the paper-shell, and the Santa Barbara soft-shell type of nuts. The most popular commercial varieties of grafted walnuts such as the Placentia and the Ehrhardt, trace their origin to the Sexton plantings. The new industry spread rapidly from Santa Barbara County to include areas planted in Ventura, Los Angeles and Orange Counties. As early as 1892 Mr. B. M. Le Long states that there were 13,000 acres in the above counties. From the beginning it was clearly seen that the walnut was well adapted to the soil and climate conditions of coastal California. As early as 1896 walnut culture was one of the leading horticultural industries of California. More than 75 per cent of the walnut acreage at present is centered in the four counties mentioned above. Notable areas have been planted in recent years in Contra Costa, Riverside, San Bernardino, San Diego, San Joaquin, Santa Clara and Sonoma Counties. The present total acreage in the state devoted to walnut culture can safely be estimated at between 86,000 and 90,000 acres. Eleven counties of the state now have 1,000 acres or more devoted to walnut culture.

It is quite a remarkable fact that the rapid increase of late years in the production of walnuts has not been accompanied by an apparent over-production or a slump in prices. The following table shows the record of production and the trend of prices from 1909 to 1922:

Production of Walnuts in California and Prices for Period of Fourteen Years.

Year.	Production. (pounds.)	Price per pound No. 1 soft shell seedlings. (cents.)
1909	19,000,000	11.5
1910	19,000,000	15.0
1911	25,000,000	14.0
1912	23,000,000	14.0
1913	23,000,000	16.0
1914	18,000,000	16.5
1915	30,000,000	13.6
1916	29,000,000	15.5
1917	33,000,000	20.1
1918	40,000,000	28.0
1919	56,000,000	31.5
1920	43,000,000	22.5
1921	36,000,000	24.5
1922	48,000,000	22.5
Average		18.9

The increase in production, and the gradual increase in prices to the grower have been accompanied by an increase in the importation of nuts. The tonnage of nuts imported into the United States in 1904 and 1905 averaged about 23 million pounds per year while the importations of 1919 and 1920 averaged 32 million pounds per year. The above table and a knowledge of the increased importations can be taken as convincing evidence that there has been a tremendous increase in the demand for walnuts by the American public. That the demand has not exceeded the supply is equally clear by the gradual increase in price of this product. During former years the walnut was looked upon as a holiday commodity whereas now it is considered an essential year around component of salads, cakes, ice-cream sundaes, etc.

A great deal of credit is due the California Walnut Growers' Association for increasing the use of walnuts in America. Their advertising and careful grading of this product has been essential to its increase in volume of sales and its popularity. Their care in grading alone which is accompanied by a guarantee that each sack of nuts contains at least 90 per cent or better of good nuts, has lifted this product from the plane of loose methods of grading to a level with other standardized food products.

Furrow irrigation in a young bearing walnut grove.

Winter irrigation of a walnut grove is advisable in December or early January. Walnuts need much moisture.

Many old groves were planted too close. This one is being thinned by removing alternate trees in every row.

Age of Profitable Bearing.

Among the first questions asked by those interested in this industry is, the age of profitable bearing of young trees. Much will depend of course upon the natural conditions surrounding the grove, the number of trees planted per acre, the variety, the cultural conditions, etc. The following table of actual yields recorded from three young groves may be considered as a guide in attempting to answer the above question:

Table 2.

Average Yearly Production Per Tree.[1]

Year.	Placentia. Season	Placentia. Yield in lbs.	Chase. Season	Chase. Yield in lbs.	Ehrhardt. Season	Ehrhardt. Yield in lbs.
1915....	7th	25	...	..	10th	80
1916....	8th	31	...	..	11th	76
1917....	9th	44	5th	18	12th	79
1918....	10th	43	6th	35	13th	81
1919....	11th	104	7th	72	14th	117
1920....	12th	82	8th	43	15th	98

[1]Uncured and ungraded nuts at harvest.

The Placentia grove is in Orange County. It is composed of 50 acres planted 60 feet apart each way. An average of 27 pounds per tree the 8th year may be considered the first paying crop. This grove might as well have been double planted for the first twelve years. If double planted, making 24 trees per acre, the above yield would mean a tonnage of 648 pounds per acre. The price of "budded" nuts in 1916 was 19 cents per pound, making a gross income of $123.00 per acre. This return would be somewhat in excess of normal running expenses. The previous year when the trees were 7 years old the gross income at 17 cents per pound would have been $90.00 per acre, which would probably have left a very small profit after all charges were deducted.

In 1918 a block of 60 trees of the Chase variety on a heavy clay loam soil in the Puente district, produced a profitable crop of 35 pounds per tree the sixth year. The records of these groves and of a grove of 38 Ehrhardt trees, are shown in Table 2.

The profitable returns from the Chase began in its 6th year. With 17 trees per acre a tonnage of 595 pounds per acre was harvested. With a 15 per cent shrinkage by curing, a return of $159.00 per acre was realized with the war-time price of "budded" walnuts at 31.5c per pound.

In using the above table of yields in projecting a business enterprise, rather than use the actual price received in the above respective cases, it would be safer to use an average price of "budded" nuts for the past 14 years, which is 22.1c per pound. Using this average price the Chase grove would have returned a gross income of $112.00 per acre the 6th year from planting.

In considering this table one should keep in mind that each of these plan- and prevent us from recalling and giving due weight to the years of light production due to frost, blight, aphis and the various natural conditions. The heavy producing dooryard trees should not in any way be considered in the calculation of the prospective yield of an acre of walnuts. The following yields are offered as a general guide and are based on statistics and a general observation of many commercial groves:

Average annual yield of walnuts in the bearing groves of California	825 lbs.
Average annual yield of walnuts safe for business estimates in proven walnut growing sections	1,000 lbs.
Average annual yield of walnuts which competent men frequently obtain	1,200 lbs.
Average annual yield of walnuts which is possible but extraordinary	2,000 lbs.

Length of Life of Walnut Trees

The limit of the profitable length of life of a walnut grove cannot be told from experiences in California. Provided the soil, climatic and water conditions are well suited to this crop, the trees may continue to thrive and produce satisfactory crops for a long period, which is difficult to limit. Some observers have expressed opinions that walnut groves, under favorable tations is growing under the best natural and cultural conditions, and is thus without doubt considerably above the average. In projecting a business enterprise, the yields shown may be looked upon as approaching the maximum possibilities and should, therefore, be discounted 25 per cent to 50 per cent to reach a figure which may reasonably be expected to prevail under average conditions. Again, the figures here presented are of little value in making comparisons between the three varieties in question, as no two varieties were of the same age the same season.

Although the cultural and natural conditions in all these groves were favorable, the plantings are several miles apart and conditions were not identical. Certain seasons are particularly favorable to crop production. The year 1919 was characterized by especially abundant crops of walnuts. These were followed in many cases by lighter crops in 1920, although the young trees were one year older and had a greater bearing surface.

The average annual production per acre varies somewhat from year to year, but if all the bearing groves in the state are considered, the average yield will fall between 800 and 900 pounds, usually nearer the former figure. It is often hard to obtain accurate figures concerning the production of particular areas, as the desire to tell a good story often seems to influence the statistics; furthermore, the average yield of a grove is the only safe guide to use, whereas it is the occasional or extraordinary one which is most often the subject of conversation. The occasional very heavy yield should not befog our judgment

(*Concluded on page 34.*)

Increasing Efficiency of Orchard Operations

by C. L. Burkholder

A Handy Lime Sulphur Pump.

THE usual practice is to put a spigot in one end of a barrel of liquid lime sulphur and roll it up on a platform. Often the spigot leaks so that the barrel has to be upended each time after drawing off enough liquid for a tank. At other times the spigot clogs up with sediment and causes trouble. An easy way to avoid this extra work and trouble is to buy a cheap pitcher pump and fit it with about three feet of pipe. Saw the lower end of the pipe off at an angle All that is necessary then is to drive in the bung and use the pump which in addition throws a stream many times larger than the spigot.

Check the Spraying.

It is impossible for the owner or manager of a large orchard to always be with the spray outfits when they are operating. The heavy infestation of San Jose Scale the last few years in many commercial orchards, can, in many instances, be traced to a faulty application of the dormant spray. When lime-sulphur is used for this spray it is a good plan to add two pounds of hydrated lime to each fifty gallons of spray. When the spray material dies on the tree it is much easier to check up and see what portions of the tree have been missed. The addition of the lime often acts as an incentive to more thorough, careful work on the part of some employes.

Saving the Spray Hose.

The spray hose usually wears out first at the connections. This often necessitates stopping work at a busy time cutting off a section of the hose and refitting the couplings. Many growers fasten a stay-on coupling around the hose about three feet from the connections at the outfit and run a two and a half foot wire from this connection to the back of the outfit. This removes most of the heavy pull from the section of the hose around the pump coupling. The hose at the rod connection can be wrapped with tire tape or heavy cloth for about a foot which prevents the sharp bending of the hose at this connection which is the cause of its wearing out before the rest of the hose.

Care of the Spray Pump.

A little timely attention will often mean a year or two added to a spray pump's life of usefulness. It is a common practice to run clear water through the pump and accessory equipment every night. When the outfit is to stand for a few days or between sprays it is an excellent plan in addition to disconnect the spray hose and draw enough cheap oil into the pump to run a little oil clear through the pump. Oil drawn out of the crank case of the tractor or automobile can be utilized for this purpose. Barrel outfits can usually be quickly removed from the barrel and the intake set in a can of oil after running clear water through the pump. Oil damages hose, so care should always be taken to disconnect all hose lines before lubricating in this manner.

A cheap, labor saving brush wagon made from a set of old trucks from the junk yard.

Extra Parts for the Spray Outfit.

There are a good many small wearing parts on every make of power sprayer that are sure to wear out eventually, and must be replaced. Every owner of a spray outfit should have a supply of these parts on hand at all times. Ask the company from whom you bought your sprayer to make out such a list for you. You cannot afford to be within ten to twenty dollars' worth of such equipment. The recent Spraying Manuel by Anderson and Roth gives a list of parts for the average outfit that should always be kept in the trouble kit. This book is published by John Wiley and Sons, New York, and contains much valuable information concerning orchard equipment and spray materials.

Protect Your Hands.

Dormant lime sulphur has a very corrosive action on the hands, and some are affected seriously by it. Very frequently the best man in the orchard organization is not able to handle a rod during the entire dormant spraying season for this reason. In such cases it would be a profitable investment to furnish this man with heavy rubber mittens. Several of the large rubber companies have these for sale. The material in them resembles light rubber booting. The face can be protected by coating the skin with a film of vasoline. The drip down the rod can be prevented by tying a piece of cloth around the rod or slipping a piece of a rubber boot over the rod. Of course, tight connections and well packed shut-offs are of first importance in this regard. It is a good plan to always test out all connections before spraying season opens.

Sharp Tools Speed the Pruning.

An old woodsman never is found guilty of using a dull axe or saw. He knows from experience that he can do more work in a shorter time with less exertion if his tools are sharp. Providing each man on the pruning force with a small carborundum stone is money well spent. He soon learns that touching up the edge of his hand shears or loppers several times each half day makes his work easier. On the other hand more work is accomplished in a day's time and the clean cuts resulting from sharp tools heal rapidly.

Many brands of pruning shears come from the factory with a sharp thick shoulder on the cutting blade. This shoulder should be ground back to a longer slant before the tool is ever used. The manufacturer often feels that he has to make the cutting blade on pruning shears thicker than necessary for fear someone will use the tool to "pry" off limbs.

Pruning saws should be sharpened every day or the men furnished with fresh saws each morning. A sharp saw will pay for itself in one day's time compared with a dull saw. Pruning saws always gum up quickly. The best thing to soften up this gummy material on the blade is water. Have you ever tried it?

Poison Mouse Traps.

Many growers are reporting serious injury from mice during the winter of 1922-1923, even in clean cultivated orchards. The mice dig tunnels down to the crown of the tree and entirely strip the bark from the roots. Mounding has not been uniformly successful. Many trees have been girdled by mice working under the mound of earth. Where there is any evidence of this trouble it is good insurance to use poison bait at least once in the fall and again in the spring as one of the regular yearly orchard operations. The poison grain should be dropped in the holes and under straw and weeds where the mice runways

(*Concluded on page* 26.)

The Strawberry Leaf Roller

by T. J. Talbert

THE strawberry leaf roller is a European insect introduced into this country about 1867. It was named and described in Europe in 1828, where it is not a serious pest. The first accurate account we have of the life history and habits of the leaf roller was published by Dr. C. V. Railey in his Missouri Report for 1869, and at that time he states that the ravages of the insect were serious enough to almost destroy 10 acres of strawberries in South Missoui.

The insect passes the winter as a caterpillar (worm stage) or as a pupa (resting stage) in the trash and litter on the ground or among the dead strawberry leaves. Some may winter in blackberry and raspberry patches under the trash and litter on the ground, while still others may winter in other places under cover, but perhaps the greatest number is in and about the old strawberry fields.

In the spring when growth starts, the caterpillars begin to feed at once on the strawberry leaves and complete their growth within a short time, after which they pass into the resting or pupa stage within the folded leaf. After about ten or twelve days they emerge from this resting stage as a full grown moth. If the insect winters in the resting stage, as most of them do, the moths begin to come out during the last half of April and continue to come forth until about the middle of May. The greatest emergence for Southwest Missouri occurs on the average during the last ten or twelve days of April.

Egg Laying Habits.

The moths are reddish brown in color, small and very active. They measure about one-half inch when the wings are expanded. The moths begin in a few days to lay eggs on the under side of the half-grown leaves. The eggs hatch in about a week into tiny, yellowish or greenish caterpillars or worms which at once crawl from the under side of the leaf to the top side, where they usually begin to feed along the mid-rib of the leaf. After the worm feeds along the exposed surface of the mid-rib for a day or so, it begins to spin silken cords and attach them to the sides of the leaf, gradually folding the leaf inward along the mid-rib which has been weakened by the caterpillar feeding there first. Finally the leaf is drawn together by means of the silken cords and the little greenish colored larva feeds on the surface of the leaf within its protected home. In about three or four weeks it becomes full grown, measuring at that time about one-third of an inch in length.

Strawberries with and without a straw mulch, Columbia, Mo.

When the larva becomes full grown it spins a thin silken web around its body and changes to its sleeping or resting stage within the folded strawberry leaf. It remains in this resting state about ten days when it wiggles out to the edge of the leaf where the

(*Concluded on page* 22.)

Editorial Problems of the Day

SAMUEL ADAMS

C. I. LEWIS

A Quality Year

EXPERIENCE in the past year has shown that good fruit has sold well while other fruit was a drug on the market. Poorly grown, blemished, poorly packed or overripe fruit never pays in the world's big market. Quality fruit does pay and seemingly will always command a good price no matter what the general market conditions may be concerning the price paid for fruit. During this past year at the time the markets seemed to be at the worst and when prices were prevailing rather low, whenever a car rolled into these markets which contained fruit with color, proper size and maturity and freedom from blemish and well packed, it immediately attracted the attention of a score of buyers and brought a price well above the market.

There are two great factors for us to keep in mind this year if we want to grow good fruit which will command a premium on the market. The first is to hold our moisture and the second is to fight the culls. We cannot separate moisture from plant food, they go together, but we do know that when a tree suffers from want of moisture it is reflected in the fruit, in the tree and in the future vitality of the orchard. Fruit lacking or suffering for moisture is small, dull colored, the foliage of the tree is small, the leaves are thin and yellow, the twig growth is weak and the buds do not have the proper vitality to bloom strongly and set well. Plenty of moisture with food, on the other hand. gives size, a bright, live, handsome color and an attractive appearance. The trees produce good strong leaves, healthy buds and make a generous wood growth. Therefore, whether we are irrigating or depending on tillage, whether we are growing shade crops or depending on mulching, we should so conduct our affairs as to conserve our moisture. In eliminating the culls, there are two factors to constantly keep in mind. First, stick to a spraying schedule and do not take chances; second, thin off the early culls because it costs just as much to grow poor fruit as it does to grow good fruit. A very happy slogan for every fruit grower to apply during 1923 is "Hold the moisture and fight the culls."

Apple Growers

WE read much these days of increased activity on the part of apple growers along the lines of standardization, publicity and advertising. There are now plans for some very extensive horticultural shows this coming year. All of this is commendable, it is a step in the right direction and will help the industry.

The rivalry among the apple growers of various states and districts, however, should be kept constructive and not allowed to become destructive. The question is not so much as to how you can drive the other fellow out of your market or out of the apple business, but how are you going to help to increase the consumption of apples in the United States because that you know will help yourself and will help the other fellow and all concerned and is a constructive step in building up our industry.

Apple growers need to give more study to the problems of standardization, storage, distribution, up-to-date merchandising, advertising and publicity. Foolish rivalry will get the apple growers nowhere. They are probably familiar with the old fable of the two cats that quarreled over the two pieces of cheese and called the monkey in to serve as judge. You all know what happened to those two pieces of cheese. Apple growers of America, there are very many monkeys waiting to eat your cheese and they will be happy to see you quarrel and not get together. The monkeys of greed, of jealousy, of disorganization, of high retail prices and high handling costs, will gloat with glee. In addition to that, there are certain other monkeys that have long been waxing fat on the cheese the apple growers have furnished.

Around the co-operatives of New York, Michigan, Virginia, Arkansas, Washington and other apple growing districts must be built the machinery which will ultimately result in a national organization of apple growers. The start must be made by first organizing the state and the district. These later must be co-ordinated so that a national program can be put across, a national program that will push the apples so that it will be possible for every man, woman and child in this country to eat all the apples they want. The problem is not one of production but really one of up-to-date merchandising.

Apple growers can learn much from the orange growers. The growers of this latter fruit in both Florida and California are pretty well organized. This year they are perhaps facing one of the greatest problems in merchandising they have ever seen. It now looks as though there may be a minimum of 80,000 cars of citrus fruits in this country and the tonnage may pass that mark. In addition to that, there is the tonnage from the West Indies, from Italy and other Mediterranean countries. The growers in Florida and California realize that foolish, destructive rivalry will get them nowheres, that what they are interested in is to get the American people to eat 100,000 cars of citrus fruits and that every orange, lemon or grapefruit that is consumed is a help to every citrus grower in America. They are now talking of inaugurating new campaigns of advertising and publicity wherein growers of California and Florida will work together. Apple growers will do well to drop their foolish, destructive rivalry and study the methods of the orange growers and profit by them by organizing much along the same lines. If this is done, apple growers need not fear over-production for many years to come but will find that the market will take an ever-increasing tonnage of apples.

Cold Storage Progress

THERE is great need in this country for more cold storage and pre-cooling plants and well-equipped packing houses. We are giving considerable space to this question because we realize that it is an important link in successful marketing.

Only about twenty-five per cent of our apples can be placed in cold storage and all who come in contact with the merchandising of apples realize that the quicker the apple is placed in a modern cold storage plant where low temperatures can be maintained, together with a proper regulation of humidity and ventilation, the better the apples will keep. There are places where the cold storage plant is not an economical proposition and a ventilated storage should be installed. There are many places where community packing houses should be built and equipped, thus saving much expense to the growers by reducing the overhead and by eliminating unnecessary buildings.

Our readers can get valuable hints from the U. S. Department of Agriculture's bulletins dealing with cold storage and packing houses. The Department of Horticulture at Purdue University has from time to time issued plans of packing houses and storage plants. There are advertisers in our columns who are recognized as leaders in their line and who are in the market to sell plans and to build and equip modern, properly-ventilated cold storage plants. By having efficient cold storage and other types of storage plants, we can prevent over-glutting of the markets at times, we can put our fruit on the market in better condition and can realize much more from it. It is a question that deciduous fruit growers especially should give their very earnest study and attention.

Our Readers

WE know from the very large number of letters we are receiving that our large family of readers was unusually well pleased with our February and March editions. How would you like to have every month as good as the February and March issues of our magazine? You can help us make every month just as good as these by co-operating with us, and there are two ways in which you can assist us. First, send us the names of fruit growers in your community who are not subscribers of the AMERICAN FRUIT GROWER MAGAZINE but should be subscribers; as each issue of the magazine is very helpful to you, so it would be to your neighbor. The second way you can assist us is to patronize our advertisers. We choose these with great care. Both they and we will appreciate your patronage and we hope that you will mention to them that you have seen their advertisement in our magazine. By working hand in hand with us, you can help us build up a bigger and better magazine.

Auction Marketing

AUCTION marketing as a system of marketing has grown very rapidly. It is hard to conceive how our big cities like New York, Chicago, Philadelphia and Boston could market their huge tonnage of perishables without the assistance of the auction. It seems to be practically the only way that a very large tonnage of such highly perishable products as cherries, peaches, pears, melons and grapes can be moved rapidly at a relatively low cost and serve a very large number of buyers. Practically all our foreign fruits which come to this country are auctioned. Most of our citrus fruits in the big cities and practically all the soft fruits from the Pacific Coast which enter the large centers of consumption are auctioned.

These illustrations, made from actual photographs, show apples sprayed with arsenate of lead—without KAYSO and with KAYSO.

Spreads the Spray and Makes It Stay

KAYSO enables you to get a complete, durable coverage of insecticide or fungicide on your fruit when applying the first spray—get your spray on right before any infection starts, and you practically have won the fight against insects and diseases.

Kayso gives complete coverage of Lime Sulfur or Bordeaux. This means the greatest protection against Scab, Brown Rot or other fungous infection.

Kayso causes the spray to dry quickly in a durable coating and enables the orchardist to get the greatest benefit from sprays that are applied in rainy weather—because with Kayso added such sprays do not readily wash off.

Kayso greatly retards chemical reaction between Lime Sulfur and Arsenate of Lead—no sludge or very little is formed.

Kayso makes Nicotine Sulfate really effective when combined with Arsenate of Lead for it liberates the Nicotine and spreads it over the insects.

Kayso makes the spray cover smooth bark in a durable coating and spreads it into cracks and crevices where San Jose Scale and similar pests seek protection.

Kayso reduces run-off waste. Every drop of spray flattens into a film. The film sets and dries quickly. Further spraying adds to the thickness of the film and gives increased protection.

CALIFORNIA CENTRAL CREAMERIES, INC.

175 Franklin Street · New York

SAN FRANCISCO CHICAGO LOS ANGELES

"The coming of spreaders in the past four or five years is a step forward in our spraying and it is only a question of time until practically every grower will use some kind of spreader." This statement by Prof. C. I. Lewis, national horticultural authority, appears in the February "American Fruit Grower Magazine."

Ask your dealer, or send coupon to New York Office

Enclosed please find 40 cents. Mail me sample package KAYSO, sufficient for 200 gallons of spray.

A-6

*Name*_____

*Address*_____

New Jersey Dry Mix

by Arthur J. Farley

New Jersey Agr'l Ex. Station

THE development of a cheap, effective, and convenient substitute for Self-Boiled Lime-Sulfur and summer strength Concentrated Lime-Sulfur, as a summer fungicide for tree fruits has been received with enthusiasm all over the country. The trouble involved in the preparation and use of Self-Boiled Lime-Sulfur and the injury frequently caused to fruit and foliage by Concentrated Lime-Sulfur have led to general dissatisfaction with these standard mixtures in many fruit growing districts.

Dry Mix Sulfur Lime, a mechanical mixture of finely divided sulfur, hydrated lime and calcium caseinate developed by the New Jersey Agricultural Experiment Station is just as effective as Self-Boiled Lime-Sulfur and much easier to prepare and apply. Furthermore, it may be applied alone or in combination with arsenate of lead without danger of injury to fruit or foliage. The successful use of the Hydrated Lime-Sulfur Glue Mixture introduced by the New Jersey Agricultural Experiment Station in 1917 as a substitute for Self-Boiled Lime-Sulfur indicates that a good mechanical mixture of finely divided sulfur and lime mixed with water makes an effective fungicide if properly prepared and applied. The chief difficulty in the preparation of such a mixture is to wet the sulfur and bring it into suspension in water. This difficulty is overcome in the New Jersey Sulfur Glue Mixture by first treating the sulfur with a glue solution, thus making a wettable sulfur.

Development of Dry Mix.

With the introduction of calcium caseinate as a sticker and spreader for various spray mixtures the idea was conceived that the same material could be used in place of a glue solution in making a wettable sulfur. Following this idea a mixture was prepared in which the same amounts of sulfur and lime were used as in the New Jersey Sulfur Glue Mixture, the only change in formula being the substitution of calcium caseinate for the glue solution.

FORMULA.

8 pounds superfine sulfur.
4 pounds hydrated lime.
8 ounces calcium caseinate.

The above amounts are sufficient for 50 gallons of spray mixture, and may be proportionately increased or decreased to meet the requirements of any spray tank.

Materials to Purchase.

It is recommended that a high grade of superfine sulfur flour or dusting sulfur be used in making Dry Mix Sulfur Lime. Common commercial ground sulfur has given very satisfactory results in some cases, but the superfine material will give the best results particularly when conditions favor the development of scab and brown rot.

Hydrated lime of a high grade, free from grit and dirt should always be used. The grade of lime designated as "finishing lime" will be found more satisfactory than any of the lower grades.

Calcium caseinate is a by-product obtained from commercial creameries. It is a chemical combination of calcium oxide (hydrated lime) and casein, sold as a very fine, dry powder. It is now sold under a number of trade names, some of the more common being Kayso, Spra-Spred, and Spracein.

How to Prepare.

Weigh out the proper amounts of sulfur, hydrated lime and calcium caseinate. Sift the sulfur through a screen to eliminate all lumps. A sieve having from 12 to 14 meshes to the inch will be found very satisfactory for this purpose.

Mix the proper amounts of sulfur, lime and calcium caseinate together dry, being careful to secure a uniform mixture. The dry mixture thus obtained constitutes what is known as "Dry Mix Sulfur Lime" a mixture that may be stored for an indefinite period and is all ready for immediate use at any time.

Commercial Forms.

Dry Mix Sulfur Lime is now being sold by a number of manufacturers of spray materials under various trade names. When buying the commercial product the fact should be kept in mind that the mixture recommended by the New Jersey Agricultural Experiment Station contains 64 per cent superfine sulfur, 32 per cent of hydrated lime and 4 per cent of dry calcium caseinate. Any change in these proportions or reduction in the amount of material used may lead to unsatisfactory results.

Proper Dilution.

Dry Mix Sulfur Lime, made in accordance with the New Jersey Experiment Station formula, should be used at the rate of 12½ pounds to 50 gallons of water. Three methods of diluting Dry Mix Sulfur Lime are recommended.

First Method—Place the proper amount of material in a barrel, or other container which will hold water. Add water slowly, stirring the mixture until the grains of sulfur are wet and a thin solution is obtained that will pass readily through a strainer into the spray tank. Strain the material into the spray tank after same is at least one-half full of water. This method is recommended particularly for use with hand outfits, or where it is not convenient to have the agitator running when the tank is being filled.

Second Method—Wash the proper amount of Dry Mix Sulfur Lime through the strainer into the spray tank with the agitator running. This method can only be used to advantage where a strong flow of water from an overhead pipe or hose is available. The strainer used should not have more than 12 to 14 meshes to the inch.

Third Method—Put the proper amount of Dry Mix directly into the spray tank after same is not over one-half full of water. As in method No. 2, the agitator should be running when the dry material is added to insure a thorough mixture with a minimum amount of settling. The nozzles or spray gun should also be opened wide and a stream of liquid under pressure directed against the dry material just as it strikes the surface of the water in the spray tank.

Orchard Tests.

The following results were secured in an eight year old peach orchard in Cumberland County, New Jersey, during the summer of 1922. Each treatment included Carman, Lola, Hiley, Belle of Georgia, Elberta and Iron Mountain. Starting with the shuck fall on May 8th, seven applications were made to all varieties except Carman and Lola, which had six. The average amount of spray material used per tree at each application was one gallon. The following table is a summary of the results with all varieties:

The exceptionally high percentage of clean fruit secured with Dry Mix

Treatments.	Total fruits.	Per cent free from disease.	Per cent scabby.	Per cent Brown Rot.
Check	14,738	48.6	49.5	1.9
Atomic sulfur	14,155	55.9	42.8	1.3
Dry mix special 2-4-50	18,294	69.1	29.8	1.1
Self-Boiled lime-sulfur	16,773	89.5	9 7	.8
New Jersey sulfur glue	12,938	93 4	5.8	.8
Dry mix standard 8-4-50	11,927	96.1	3.3	.6

Sulfur Lime in this orchard where scab was very prevalent, and during a season that was favorable to its development indicates that it is an effective summer fungicide for peaches and fully equal to the standard self-boiled lime-sulfur. The relatively poor control secured with Atomic Sulfur and Dry Mix Special indicates that it is not safe to depend upon mixtures having a low sulfur content for the control of peach scab in orchards where the disease is likely to be serious.

Dry Mix Sulfur Lime was also used in several apple orchards during 1922, in comparison with Concentrated Lime-Sulfur, Self-Boiled Lime-Sulfur and Atomic Sulfur, but its true value as a summer fungicide for apples cannot be determined from these tests, owing to the absence of scab and other serious fungous diseases from all of the orchards in which the tests were conducted. However, all of the data secured, together with observations made during the season indicate that it is just as effective as self-boiled lime-sulfur and much less dangerous to use than concentrated lime-sulfur, particularly during not weather.

A Spraying Record

WE WERE very glad recently to hear from W. C. Baird, one of our readers in northern Ohio, who has been in the fruit business for thirty years. Mr. Baird's ranch is located near some of the large cities of northern Ohio and he finds it pays him to grow a good many varieties so that he can have fruit on the market for a long season.

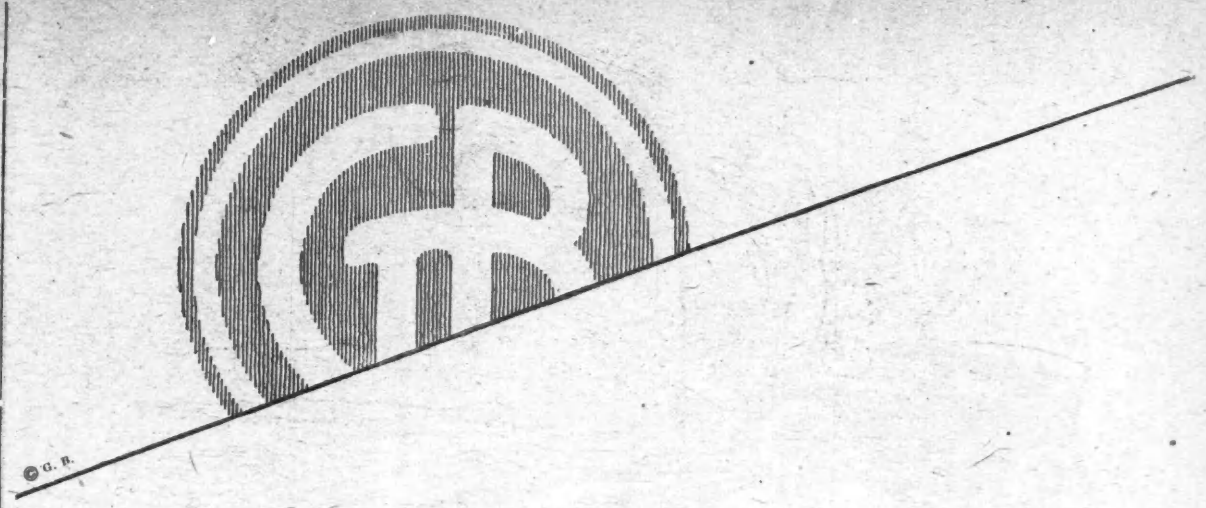
From two acres of apples, containing some thirty varieties, last year he sold $1,100 worth of fruit. His crop begins with Yellow Transparent and he has taken fruit to the market until the late harvest in the fall. He was one of the first men in his community to spray and interested one of his neighbors, M. A. Ring, in fruit growing. They started in first with a little hand pump and have increased their equipment until today 10 horsepower outfits with 300 gallon tanks are used. Two spray guns are used for each outfit. Water is piped from a spring to a tank on the hillside. Through a two-inch pipe, the spray tank can be filled in a very short time. The tank is built of brick and cement and holds 300 barrels. Water is forced from the spring to the tank by a hydraulic ram. From the reservoir on the hillside is laid two and one-half inch pipe with some two-inch branches and two-inch standpipes are placed every few rows. These are built up high enough to run into the sprayer and it takes about five minutes to fill a 300-gallon tank. Very little time is thus lost in refilling the tank.

A splendid record was made with this outfit. With four men, one to drive, two to handle guns and one to mix up new materials, it was possible to put on 14 filled tanks of 300 gallons capacity in one day.

Last month we showed how Mr. Ballou of northern Ohio had a system of water distribution that pays. We are glad to bring out this similar system of Mr. King. It pays to have a good water supply and to so have it that the cost of spraying can be kept down to the minimum.

Burgundy Mixture

BURGUNDY mixture is a summer fungicide which has the advantage of being largely indiscernible after it is applied to the fruit. Berries like longanberries, are sometimes sprayed with Burgundy mixture even after the berries begin to show some red. The formula generally used is copper sulphate one lb., sal soda or sodium carbonate one-half lb. and water 50 gals. The mixture is prepared in much the same way as Bordeaux mixture. Each chemical should be dissolved separately. Stock solutions can be made similar to Bordeaux. These should be at the rate of one lb. to one gal. The copper sulphate can be diluted with the remainder of the water and the sal soda added.



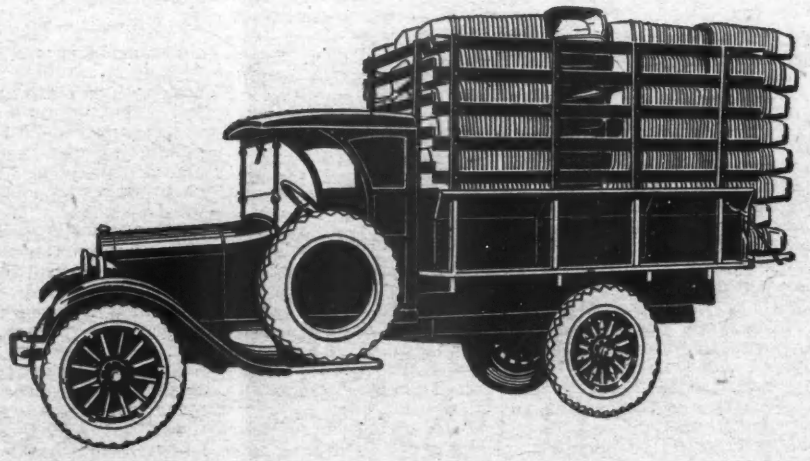
The Fruit Grower's Preference

There are fully 150 truck manufacturers in America, but 85 per cent of the total production comes from ten factories.

Among these first ten are Graham Brothers, whose rapid advance in the 1 ton and 1½ ton truck field is due, in no small measure, to the good will of the Fruit Grower, who is showing a constantly increasing preference for Graham Brothers Trucks.

1 Ton Chassis, $1265; 1½ Ton, $1325;
f. o. b. Detroit or Evansville, Ind.

GRAHAM BROTHERS
Detroit *Evansville*



GRAHAM BROTHERS TRUCKS

SOLD BY DODGE BROTHERS DEALERS EVERYWHERE

Owners Say, Hupmobile Costs are Lowest

The most amazing thing about the Hupmobile has yet to be learned by the vast majority of motor car buyers and owners.

That is the fact that our owners' carefully kept cost-records, and their letters to us, strongly indicate that the Hupmobile cost of operation and maintenance is lowest among motor cars.

This is particularly true when the records cover a period of years.

What we are repeating here is the actual experience of Hupmobile fleet-owners, and of individual Hupmobile owners, who previously operated cars generally conceded to be among the most economical five manufactured,—and who have formed their judgments on the sound basis of cost-per-mile.

Hupp Motor Car Corporation, Detroit, Michigan

Hupmobile

California Cherries

(*Continued from page 3*)

hind by large wooded hills were the 170 tents, the residences of the pickers and packers. The population of the city included the "City Marshal," 40 children, 274 working people, 38 automobiles, a score of dogs and several milk goats. It was well laid out and good order prevailed. Running north and south along the edge of the camp nearest the orchard was the main business thoroughfare, designated as Main Street, while further up the slope and running parallel to this were First, Second and Third Streets. At the intersection of Main and Rose Streets stood the "town hydrant," where pure water piped down from the hills was available. Across the street a short distance was one of the shower baths. At the far end of Main Street, where it was intersected by Cherry Lane, was another source of water supply. All streets were duly labeled with the above designations, and the tents were also numbered. If, therefore, you wished to find a certain individual all that was necessary was to inquire at the local postoffice his address and then follow the signs.

Each tent was equipped with a good board floor, army cot, oil heater, and cook stove. Wood for cooking could be had for the chopping. Campers had to bring their own bedding and purchase their own supplies. Supplies were delivered in the camp from Cordelia three times each week. All grocery orders were taken from and delivered to the tent door. Everyone was required to assist in keeping the camp in a sanitary condition.

Music and dancing on an outdoor platform furnished recreation for the workers in the evening, while a fenced-in kindergarten and the municipal playground was the center of attraction for the children.

The Packing House.

The packing house, while not expensive or imposing, was large and airy and well arranged. The cherries are received at the packing house by one of the floor men. The number on the buckets are tallied on a sheet as they are taken from the wagon and at the end of the day each picker is credited with the number of buckets he has picked. Most pickers will average eight or ten pails a day. As checked in the pails of cherries are stacked on the floor of the packing house in readiness for the packers. The packers, eighty-six in number, are seated at the long packing tables and all boxes and fruit are delivered to them by the floor boys. Each packer is provided with a small tray on which the pails of fruit are emptied. Only women and girls do the packing, as most men agree that the task is too much of a strain upon their patience and that their fingers are adapted for work less petite.

How Cherries Are Packed.

California cherries are packed in a very light, shallow, ten-pound cherry box, with a partition across the center. The empty box is taken from the elevated shelf running down the middle of the packing table and placed directly in front of the packer on a rack which slopes the box forward at about a 30-degree angle. In making up the boxes the tops are nailed on, but the bottom is left open, hence all the fruit is packed from the bottom side and when completely filled and nailed up the first layer put in becomes the top, or face, of the box.

As with all good fruit packing, good grading is essential. The cherries must be selected for uniformity of size, color and freedom from blemishes. Fruit that is green, over-ripe, abnormal shape, picked without stems, or that is rain cracked, wind bruised, or that shows insect injury or is damaged in any way is culled out by the packer.

The first step in starting the pack is by placing ten, eleven or twelve cherries, according to size, across the end of the box, being careful to place each fruit with the ventral suture, or the side with the black line, facing up, and also so that all stems are pointed toward the packer. One hand must be used to hold each cherry in place while the next is put in. When the first row is completed a second line is placed next to them in like manner. When these two face rows are in place the first line of the second layer, or double face, is put in by placing a cherry over the spaces between the cherries in the first layer. Thus the fruit in these two layers is placed one by one in the entire half box. The ends are then reversed and the other half is packed in the same way. With the double face carefully packed the remainder of the box is filled with cherries which are put in with little or no regard being given to alignment. Always, however, the corners and sides of the box are well filled and all stems are pointed toward the center of the box and never allowed to extend out over the sides. The box is carefully "finished off" so as to avoid the cutting or crushing of any of the fruits when the bottom is nailed on. The completed box is now removed by one of the floor boys, who also punches the packer's card which gives her credit for the box.

The work looks easy—nothing to it at all, only a great deal of painstaking care and practice. "How many boxes can one pack in a day?" we asked the foreman. "Oh, that varies with the packer. That young lady on the end of the second row there packs from 30 to 36 boxes a day, but the average packer will not get over half this number. The work is tedious, and where half the fruits have to be handled individually the number of boxes put out in a day is not very large. We pay our packers by the box in order to get as much fruit packed in a day as possible. This does not mean, however, that we sacrifice anything on quality, as every box is inspected, both top and bottom, before leaving the packing house."

The Inspection.

We were interested in this inspection. The packed boxes were all brought to a large table where the bottom of the box was looked over and any additional fruits put in or any removed which might be crushed in nailing or which were off grade. The bottom of the box was now nailed in place and it passed on to the second inspectors, who reversed the package, pried open the lid and inspected the face or real top.

The face of a good cherry pack is certainly a thing of beauty. Large, rich, glossy, dark-red cherries packed solid, arranged in perfect rows, and not a stem in sight. Yes, there is the very tip of one showing; but not now, because the inspector had it carefully hidden away almost before we noticed it. The sight of a stem is strictly "taboo," although they are necessary, as previously explained. In raising up the lid a slight juice stain is noticed in one place—one cherry is a little over-ripe. This is carefully removed, replaced by another which is firmer, and the slight stained spot on the lid scratched off with a sharp scraper. Deception, you say. No, not at all; just extraordinary care to see that those cherries will be in perfect condition after their long journey in a freight car across the continent. All defects corrected, a little feather duster passes over the fruit, the lid is renailed, the variety stamped on the lithograph label and it is ready for its place in the car.

Rid Your Fruit of defective pests of all kinds the new, easy, Johnson Way. 7 times faster than spraying, costs less than half. Simply send name for big, free, illustrated book that tells all about it. **Free**
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Centaur Small Farm Tractor
Most efficient small farm tractor made. Displaces horse. Plows 7 inches deep in clay sod. Ideal for cultivating, harrowing, planting, mowing and all belt work. Costs but 8c to 10c per hour to run. Has a reverse. Four years' proven performance. Liberal terms. Write today.

The Central Tractor Co.
14 Central Ave.
Greenwich, Ohio

Crop Report

THE middle west and south were visited by two unusually cold spells during March. Some districts reported the coldest temperature in from 25 to 40 years. Early telegram reports indicated that the strawberry crop was severely damaged and the peach crop perhaps ruined. It was afterwards found, however, that while in a few low spots the damage to the peaches in the south was 90 per cent, in most districts it ranged from 10 to 50 per cent and the indications are today that the south will produce a large crop of both peaches and strawberries.

In the big peach belt of western New York, the outlook at the time we go to press is very favorable for a very good peach crop. Growers pretty generally believe that there has been practically no damage to the buds.

Ohio and Indiana report a favorable outlook at this time for both apples and peaches.

Central and southern Illinois seemingly suffered little from the freeze. There is not a heavy setting of peach buds owing to the very heavy crop a year ago but there seems to be a fair supply of Elbertas and Hale's Early. The present indication is for a 50 per cent crop. Apples from southern Illinois are promising. Winesaps which were light last year are heavily budded.

California growers have been worried over the protracted drought throughout February and March. This was broken, however, the first week in April and the indications are today that California will probably have its third $200,000,000 fruit crop in succession. The season has been early, the first California cherries being shipped the last of March, 29 days ahead of the season.

The Pacific Northwest reports a very favorable outlook at this time for a good crop of all classes of fruits. Reports from Wenatchee, Yakima and Oregon are all favorable. Not until early in June, however, will it be definitely known what the crop of apples, pears and peaches will be as there is still plenty of time to have critical temperatures which might seriously curtail the crop.

We hope to inform our readers more fully next month on crop conditions.

Fertilizing Fruit Trees

FRUIT trees should be fertilized just about the time growth begins in the spring. The quantity of fertilizer to be used on fruit trees depends largely upon the condition of the trees and the fertility of the land on which they are growing, says Prof. C. C. Newman, Horticulturist, who advises that, as a rule, one pound of an 8-4-4 fertilizer should be applied to fruit trees when planting, 2 pounds the second year, 3 pounds the third, and every year thereafter from 4 to 6 pounds, according to the need of the tree. A bearing peach tree should make an average terminal growth of from 12 to 24 inches. A bearing apple tree should make an average terminal growth of from 6 to 12 inches. If the trees are making more growth than this, the amount of fertilizer recommended should be reduced accordingly.

Two applications of nitrate of soda or sulphate of ammonia should be applied to both peaches and apples, the first application about the middle of April and the second not later than the first of June. The quantity should vary with the size of the trees. The nitrate of soda should be scattered broadcast under the branches of the trees and rightly dug into the soil. The quantity of soda to be applied should vary from ¼ to ½ pound to trees that are from one to three years old and from 1 to 3 pounds to trees that are from four to six years old, the amount depending on the growth the trees are making. —Clemson College.

Subscribe for The American Fruit Grower Magazine—thee years for one dollar.

PERMANENT ENAMEL BAKED ON STEEL

Eight years ago, when Dodge Brothers originated the all-steel motor car body, they took advantage of the absence of wood in the framework to bake an enamel finish on the surface of the steel.

In a vast series of electric ovens, especially designed and built by Dodge Brothers' engineers for this process, three distinct coats of black enamel are successively baked on the steel at an intensely high temperature.

The result is a finish so hardy and durable that it seldom requires more than a good cleaning and polishing to restore the original brightness.

Even in sections of the Southwest where alkali in the soil is especially destructive to body finishes, Dodge Brothers enamel retains its beautiful lustre after years of wear.

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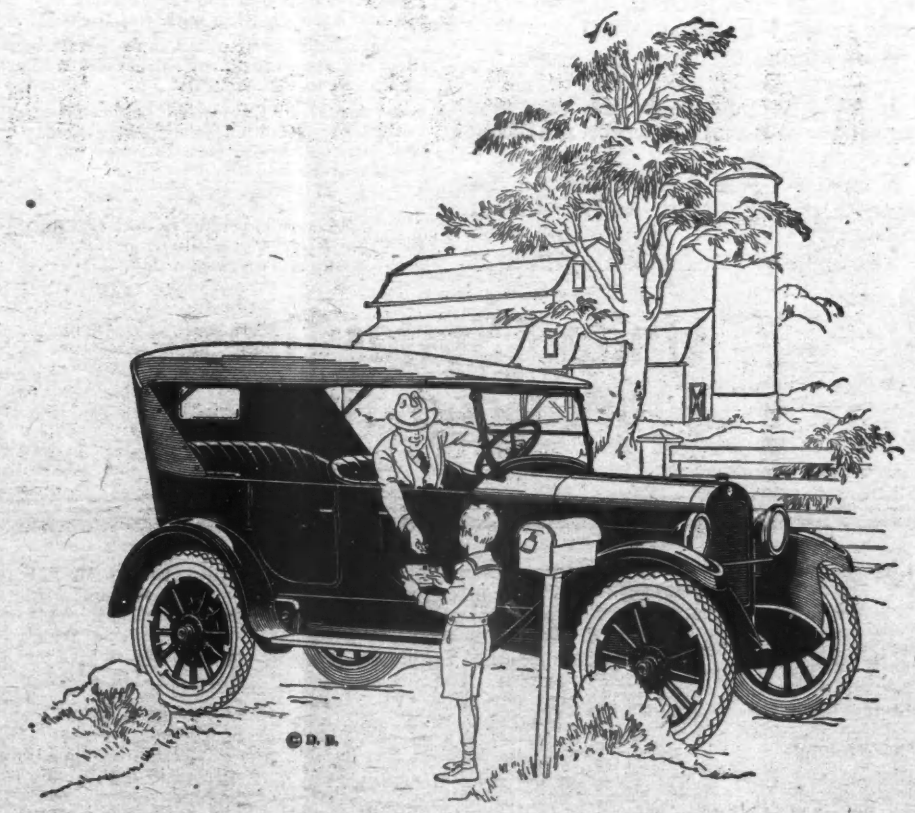

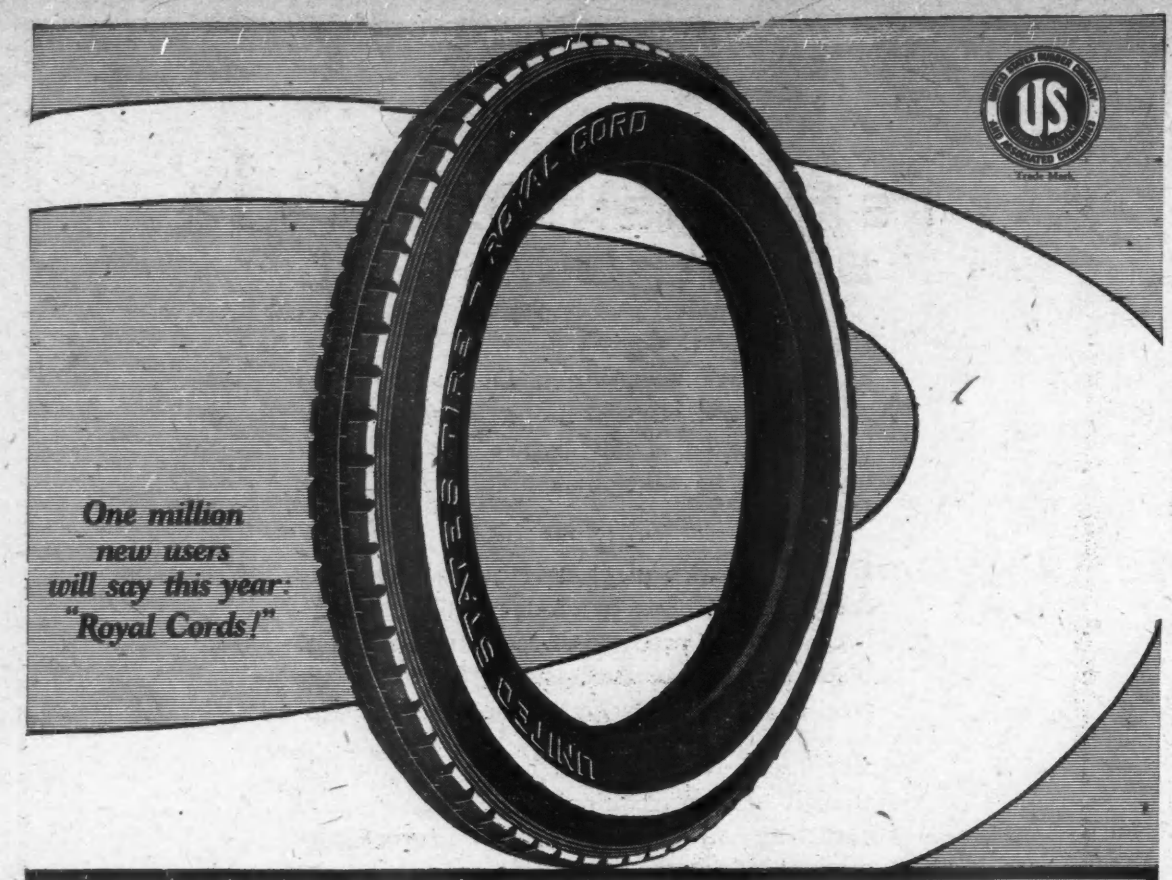

If this happens to be the year you come over to Royal Cords

THERE'S not much difference between the way a man buys his first U.S. Royal Cord and the way he buys any other tire.

But there comes a time a little later when he thinks back to see how he came to ask for a Royal Cord.

And why he didn't do it sooner.

* * *

If 1923 happens to be the year you come over to Royal Cords you are likely to notice this—

You didn't buy Royal Cords on the strength of any advertised extravagant mileages.

The makers of Royal Cords believe in letting each tire user make his own comparisons on his own car. That provides every man with the facts in the form most useful to him.

You didn't buy Royal Cords on an impulse. The conviction that the Royal Cord is a good tire had been growing with you for some time.

You didn't buy Royal Cords merely because they are the product of the largest rubber organization in the world.

More than anything else, it has been the simple, understandable policies of the Royal Cord people that have made the Royal Cord seem a tire of personal responsibility.

* * * *

It has been the growing understanding among men that Royal Cord value conscientiously outtops all other tire values today.

United States Tires are Good Tires.

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Blackberry Industry

(Continued from page 5.)

fertilizers of different analysis. It would no doubt pay the growers to make a test with different kinds and amounts of fertilizers to determine the most profitable kind and amount to use.

The Pruning.

The old canes of the Lawton variety are removed during the winter. Most of the canes are dead at that time and can be easily broken off. The McDonald variety can be mowed off after harvesting and new shoots will then come out for the next season's crop. This is a simple method. The canes are usually topped in spring when about four feet high, and some of the side branches are pruned off to make strong, upright and more stubby stalks.

The growing expense per acre, outside of picking is estimated at about $10.00 per year. The average acreage in berries per grower is about 10 acres. However, Mr. J. S. Ogburn, who is one of the pioneers in the berry business at Lindale, has 400 acres in berries. He intends to increase this to 500 acres next year. This is perhaps the largest blackberry field in the world.

Other Blackberry Possibilities.

The blackberry grows wild over all East Texas and there are thousands of acres of land just as well adapted for the cultivated blackberry crop as Smith county in general or Lindale in particular, but aside from that section, blackberry culture has not developed into a commercial industry. It is necessary to have canning factories in connection with the crop, as at least 75 per cent has to be canned and it takes experience to handle the business profitably, under the present system of marketing.

In the Lindale vicinity the crop has proven quite profitable and has greatly enhanced the value of the land. Even this year which has been an off year, the growers netted from $30 to $40 per acre, while in seasons of good prices, the average profit has run from $75 to $100 per acre. However, even in the Lindale section, the growers are beginning to realize that there is a limit to the profitable acreage under present conditions and while the acreage has been greatly increased the last few years, it will very likely not be increased as much in the near future, unless the prices received for their berries become better.

The blackberry industry is largely a problem of successful and profitable marketing. It is a crop which is well adapted to a large territory; it can be easily grown, and at least as far as East Texas conditions are concerned, it can be produced with hardly ever a failure. With a thorough and effective system of co-operative marketing, which includes a better system of distribution and a certain amount of advertising to increase the consumption, there is no reason why the blackberry should not develop into an excellent money crop in other sections in connection with a good system of diversified farming.

Spraying Georgia Peaches

CIRCULAR 37, by the Georgia State Board of Entomology and the U. S. Department of Agriculture cooperating contains helpful information on the control of the curculio and brown rot in Georgia peach orchards. The spraying schedule recommended is as follows:

First application: Immediately after the petals (pink part of flower) have fallen, consisting of one lb. powdered arsenate of lead, plus lime water from three lbs. of stone lime to each 50 gals. of water. Second application: When calyces or "shucks" are shedding, or when small peaches are exposed, consisting of one lb. powdered arsenate of lead, plus lime water from three lbs. of stone lime to each 50 gals. of water. Third application: Two weeks after the second application, or about four weeks after the petals have been shed, consisting of self-boiled lime-sulphur, 8-8-50 (no arsenate of lead in this application). Fourth application: Four weeks before each variety is due to ripen, consisting of one lb. powdered arsenate of lead to each 50 gals. of 8-8-50 self-boiled lime-sulphur. Early varieties: These should be sprayed three times. Use the materials recommended for the 1st, 2nd, and 4th applications above, applying them at the same time as noted above.

For dusting the following schedule is recommended:

First application: Immediately after the petals (pink part of flower) have fallen, consisting of *arsenate of lead, 5 per cent, and lime, 95 per cent. Second application: When calyces or "shucks" are shedding, or when small peaches are exposed, consisting of *arsenate of lead, 5 per cent and lime, 95 per cent. Third application: Two weeks after the second application, or about four weeks after the petals have been shed, consisting of sulphur, 80 per cent; arsenate of lead, 5 per cent. and lime, 15 per cent. Fourth application: Four weeks before each variety is due to ripen, consisting of sulphur, 80 per cent; arsenate of lead, 5 per cent, and lime, 15 per cent. Early varieties: Use the same dust formula as above at the time indicated for the 1st, 2nd and 4th dustings on early varieties.

*It is not necessary to use sulphur in the first two applications, though the regular formula (80-5-15) may be used if desired.

Australian Exports

AUSTRALIA and Tasmania expect to ship 2,000,000 cases of apples to England this season. Tasmania estimates 1,250,000 bu., Victoria, one-fourth million, western Australia, one-fourth million, south Australia 50,000 bu., and New South Wales, 20,000 bu.

Painting Wounds

It is a mistake to paint wounds until after the sap has gone out of the wounds. They can then be covered over with shellac or paint.

Iowa Cold Storage Experiments

THE cold storage investigations for the seasons of 1919-20, 1920-21 and 1921-22, include experiments with apples and their keeping qualities, as affected by maturity, delayed storage, aeration and various kinds of wraps. The work in 1919-20 was chiefly that of maturity and a delayed storage test. In 1920-21 the work included investigations on the effect of maturity, delayed storage and aeration, and in 1921-22 the work was confined chiefly to the effects of various kinds of wraps. Some respiration studies during the past season indicate that the rate of respiration for specified intervals over an extended period of time is considerably less for apples when wrapped with a wrap impregnated with a neutral mineral oil than when not so wrapped. Apples so wrapped scalded very little or not at all, while all other treatments showed a considerable amount of scald.

Four boxes of Jonathans were picked on six different dates, four days apart, throughout the picking season. At each picking one box was stored immediately and the other three stored at the following weekly intervals. The apples picked during the three last picking dates had considerably more spot than those of the three early pickings. Of the last three pickings the apples stored earliest had little or no spot, while each successive later storing showed as a rule an increasing amount of spot. The conclusion is therefore drawn that if Jonathans are stored in cold storage (32 deg. F.) before reaching a certain state of maturity, they will not spot enough to reduce their value commercially.

No soft-scald occurred on Jonathans where they were aerated by means of electric fans, but where not so aerated and under the same conditions of maturity, time of storing, humidity and temperature, considerable soft-scald occurred. Soft-scald on Jonathans after once present on the apple, confined itself to the original affected area. Several hundred apples on which the affected areas were outlined with indelible pencil showed no increase in the area affected after several months' observation. This was true for both wrapped and unwrapped specimens and at 32 deg. F, as well as 70 deg. F.

Grimes apples were picked in a way similar to that in which the Jonathans were picked. It was found that common scald can be prevented by obtaining the optimum degree of maturity. Grimes apples which were well matured—that is, picked late and stored immediately—or picked early and delayed at ordinary packing shed temperatures from two to three weeks, did not scald in cold storage until several weeks after the normal commercial storage period of the variety had passed.

Grimes apples held later than the first of January are very susceptible to internal breakdown. Jonathan spot is more severe on apples in the latter part of the storage season. These two varieties should, therefore, not be held later than the first of January.

Aeration did not entirely prevent scald on Grimes when the latter were not well matured. During the season of 1920-21 apples picked very early scalded both when aerated and when not aerated, and even to a greater degree when aerated.

The value of oiled wraps was tried out in a comparative test with various kinds of wraps, including common or sulphite paper, wax, tinfoil and oiled wraps. Western grown Grimes and Jonathans were used in this test. Scald was practically controlled in all cases where the oiled wraps were used, but occurred with all other treatments. The results, as far as the control of Jonathan spot is concerned, of these different treatments are not so conclusive as those in regard to apple scald.—These notes were taken from the annual report of the Iowa Experiment Station.

Nitrate of Soda

is now universally recognized by horticultural authorities to be

Absolutely Essential

in orchard fertilization for the profitable production of a crop of good marketable apples.

The reasons given are that Nitrogen is the limiting element in production for the apple crop and that it must be applied early and in immediately available form.

The various State Experiment Stations in the apple districts are recommending Nitrate of Soda as the proper form of Nitrogen to use

For Apple Trees

and in quantity from 2 pounds to 10 pounds per tree, in the Spring before blossom time.

The Ohio Station found that where 2½ pounds of Nitrate of Soda, 5 pounds of Acid Phosphate and 2½ pounds of Muriate of Potash per tree were used the simple addition of an extra 2½ pounds of Nitrate of Soda per tree increased the yield of apples 24 barrels per acre.

Ask your own Experiment Station Horticulturist about it and secure your Nitrate of Soda early.

Send this coupon for my Free Bulletin Service

Dr. William S. Myers, Director, Chilean Nitrate Committee,
25 Madison Avenue, New York

Dear Sir:—

Please send me your Bulletin, "Fertilization of Apple Orchards," and others as issued, also list of dealers who sell Nitrate of Soda.

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THE F. E. MYERS & BRO. CO.
152 Church St., Ashland, Ohio

EXAMINE THIS FINE SPRAY HOSE

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Pick up the end of a length of Goodyear Spray Hose. Note how thick and strong its body is made, and you will better understand why this good hose carries high pressures safely and continuously without sign of wear.

Dig your thumbnail into its tough, thick cover. It is this coat that protects Goodyear Spray Hose when it is scraped against trees, when it is dragged over rough ground, through sand, and when it is exposed to the weather.

You will note that the tube, too, is made from a scientific compound, perfected by Goodyear, made capable of resisting the deteriorating action of strong solutions.

Then, unreel enough of this hose to satisfy yourself that it is light in weight and easy to handle, so that better and faster spraying can be done. It will cost you less to use Goodyear Spray Hose because it lasts longer than the ordinary kind.

See that you get Goodyear Spray Hose when you buy new spraying apparatus. See that you get it when you are preparing old apparatus for the spraying seasons. If your dealer hasn't it in stock, write to Goodyear, Akron, Ohio, or Los Angeles, California.

Goodyear Means Good Wear

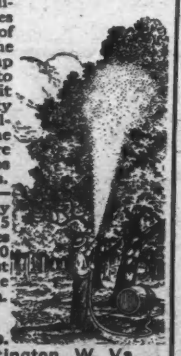
GOODYEAR

SPRAY HOSE

ARMSTRONG STANDARD SPRAY PUMP

The Pump of a Hundred Uses

Every day in the year—even when you're not working on fruit or vegetables—there is some good use you can make of the STANDARD SPRAY PUMP. For washing the automobile, washing windows, whitewashing and disinfecting, fighting fire, spraying live stock, injecting medicines in veterinary cases—these are only a few of the ways in which the Standard Spray Pump helps you. It's handy to carry around—yet it throws a stream thirty feet high, sprays the tallest fruit tree from the ground, and does more work than larger pumps on platforms and ladders. Made entirely of brass—nothing to be affected by chemicals. Guaranteed 5 years. If your dealer does not have it, send us $6.00 and his name. ($6.50 West of Rockies and in extreme South.) Knapsack extra. Send for Catalog D.



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Bridge-Grafting Girdled Trees

I have had several of my young apple trees girdled by rabbits during the winter. Will you tell me how to save them? —B. G. S., Wisconsin.

WHETHER your trees are partially or completely girdled, they can be saved by a type of grafting known as bridge-grafting. This is best accomplished at a time when the sap is just beginning to flow, in other words about the time the buds are swelling, but may be done later, provided dormant scions are available.

Bridge-grafting consists of establishing a bark connection between the roots and the trunk of the girdled tree. Several methods can be used but the following has given good results in New York and in the Northwest. Scions are chosen of sufficient length to overlap the girdled area and cut on one side at both ends with a straight, clean, slanting cut about an inch and a half long. These ends are then inserted into rectangular vertical cuts about two inches in length made through the bark of the tree above and below the wound. The scions are then held in place by a couple of small nails (No. 18 guage) driven through the bark at each end. It is then very important that all surfaces receive a coating of grafting wax following the operation the same as in other types of grafting.

If bridge-grafting is done early enough in the season, scions may be cut from the trees for this purpose at the time of grafting. Otherwise scions must be cut while in a dormant condition and stored in a damp, cool place until they are required for use.

Sometimes it is impossible to obtain dormant scions for bridge-grafting, and in this case a tree which is completely girdled may be saved by planting a few small seedlings at the base and the top grafted into the crown of the tree the same as in the case of the scion. The number of seedlings to use will depend upon the size of the tree, but as a rule two or three will be sufficient.

Bleeding of Grape Vines

I delayed the pruning of my grape vines until April this year, and they are bleeding quite freely. Will this do them much harm, and is there anything I can do to prevent the injury?—W. S. B., Pennsylvania.

GRAPE vines should preferably be pruned in late winter o. early spring. However, the bleeding caused by later pruning is not as dangerous to the vine as most people have supposed. Analyses of this sap from the cut canes show less than one per cent of sugar or other plant food. Experiments in this country and in Europe have also failed to show any appreciable reduction in the yield of grapes caused by the loss of sap in this way. Bleeding grape vines may therefore lose considerable sap in a week's time without serious damage, although earlier pruning would doubtless be more desirable whenever possible.

Nitrogen Fertilizer for Small Fruits

I have been using nitrate of soda on my tree fruits with good results. Can this fertilizer be used on small fruits with equally good results?—W. O. B., Ohio.

ADDITIONS of a nitrogen fertilizer have been found to bring profitable results on all fruits with one exception—the strawberry. This includes grapes, raspberries, currants, gooseberries, etc. In most cases the inorganic form of fertilizer, i. e. nitrate of soda or sulphate of ammonia is preferable as it is more quickly available to the plant and gives the initial effects so valuable in increasing the set of fruit. However, with the gooseberry, the organic form of nitrogen—stable manure—has given better results.

Nitrogen fertilizers should be applied to small fruits early in the spring, about the time when growth starts. It is then made available to the plants with the first rain following application, and the greatest possible benefits are thus secured.

Fire Blight Control

My pear orchard was full of fire blight last year, and altho I did my best in keeping it cut out, the result was not extremely gratifying. Can you give me a complete program for controlling this serious disease, disinfecting wounds, etc.? I am also planting a new pear orchard and should like advice on getting it started in the best possible manner.—S. A. R., New York.

FIRE Blight is easier to control than most people believe, only it requires the utmost vigilance and careful watching, together with the prompt removal of all blighted limbs as soon as they appear. The greatest number of new infections come at blossoming time. For this reason the greatest good can be done in controlling the disease as soon as these primary infections become evident. This also removes the least possible amount of wood, and provided the cuts are made far enough below the blighted area, little or no new infection should take place that year.

One of the most important things in connection with the removal of Fire Blight is that of proper disinfection of the pruning wounds. Following each cut that is made, the pruning tool should also be thoroughly disinfected, to avoid any possibility of carrying the Fire Blight bacteria to the next limb or tree. Bichloride of Mercury (corrosive sublimate) at the rate of 1:1000 is the most common disinfectant used in this work. However, the authorities in the West now recommend a mixture of bichloride of mercury and cyanide of mercury at the rate of one part of each to 1,000 of water as the safest disinfectant for both pruning tools and wounds. This may easily be applied with a sponge so that all surfaces are thoroughly covered.

Pear trees should not be forced into vigorous growth by excessive cultivation or fertilizer as this makes the trees much more susceptible to blight. Except on weak soils, they should be kept in sod at least every other year.

In conclusion there are only a few points to remember in controlling fire blight, but all very important ones. Prompt removal of blighted branches, thorough disinfection, and a soil management which does not promote too much growth and vigor are all necessary for successful results.

Intercropping New Orchard

Would you advise intercropping in a newly set orchard and what crops are best for this purpose?—J. T. S., Illinois.

FROM the year that an orchard is first set out, intercropping is a secondary proposition and should be treated as such—the trees come first. It has usually been considered desirable to make use of the land between the trees for the first few years from the standpoint of increased profit. Furthermore, a cultivated crop insures cultivation of the trees.

Whatever intercrops you use, however, the selection will necessarily depend upon your local conditions. A wise choice in this matter will aid materially in the later success of the orchard.

Shipping Red Raspberries

by Ralph Erskine, Seattle

WHEN a carload of red raspberries can be successfully shipped from the Pacific to the Atlantic coast, it means that a new step in refrigeration has been attained. Last July the Washington Berry Growers' Association shipped a car of Cuthbert raspberries to the Boston market, and the condition of the fruit upon arrival was so satisfactory that they have determined to develop the markets in the eastern section of the United States.

During the 1921 season, a carload was shipped to Chicago where it was sidetracked for two days after its arrival. When examined the fruit was found to be in good condition, and they realized that these two days would have put the car to Atlantic coast points. This year the shipment was made direct from Sumner, Wash., to Boston, and the certificate of inspection showed that there was practically no mold.

The process of pre-cooling fruit before it goes into the refrigerator cars is not a new one but has been used for many years by other associations with good results. The cold air method has been used largely after the cars were loaded and it was found that the period of shipment could be greatly increased by so doing. It remained for F. H. Krugg, sales manager of the Washington Berry Growers' Association to try a better method which resulted in the above coast to coast shipment.

Improved Method.

Instead of loading the cars first and then cooling the fruit, the berries are placed into a large cold room where the temperature is only a few degrees above the freezing point. After they have remained here all night, or sufficient time to cool them thoroughly, the crates are loaded into the cars by means of a belt conveyor and five men in the car. The best time recorded was 20 minutes from the time of opening the ice cooled car until it was loaded and sealed.

This is the second season of the operation of the pre-cooling plant and the association intends to develop this part of the equipment in order to take care of their best quality fruit. During the 1921 season, when the plant was tried out for the first time, there were 179 cars shipped out, 111 of which were shipped out of the old territory to such points as Minnesota, Wisconsin, Nebraska and Illinois. This year there was a total of 246 cars of berries, the greater part of which went to points that are not reached by the old method of pre-cooling.

In a better season there would have been much different results than were shown this year, since the fruit was unusually ripe, due to the extreme short season. Nevertheless the fruit was in demand after the people became used to the difference in the color and realized that the western Cuthbert had a superior flavor.

The Best Prices.

"We get our best prices from the fresh fruits, provided the market is not too well loaded during the picking season," said F. H. Krugg, sales manager of the association. "In view of this fact we have got to put our fruit out of the reach of the bulk of the shipments if we are to avoid the usual congestion. If we don't take advantage of the more distant markets, it will only be a few years when some of the other berry producing districts will be supplying them.

"Our second class fruit, of course, goes to the canneries but we cannot afford to furnish them with much of the crop if we turn the maximum profits to the growers. The local markets are already glutted, during the berry season, by the smaller independent producers who furnish this trade to the detriment of the prices. It therefore behooves us to develop the more distant trade and send them our best berries each year to make them realize that we have a fancy product that can be supplied every year.

"Of course our berries are new on the eastern markets and it will take some time to get the trade to buying our fruit. There is one point in our favor and that is the time of ripening of the western grown berry. We can ship to these markets at a time when their own berries are off season and there is sure to be a demand, and especially after they begin to realize that we have a fruit of fine flavor. One dealer wrote us that he was positive that he could have used a car of Washington berries per day if he could have secured them."

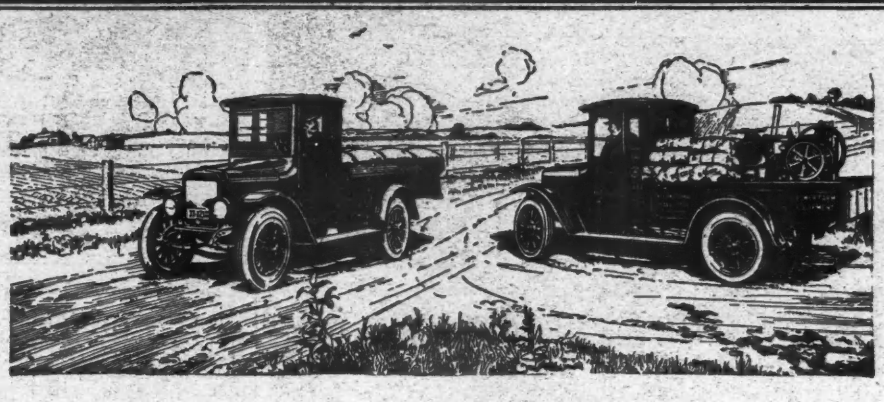
Better Organization.

Mr. Krugg told how the five different berry associations in the Puget Sound district could better operate under one head and avoid competition and duplication. The shipments to all markets could then be better regulated and it would mean a greater return to the grower every year. From 90 to 95 per cent of the fruit grown in the district is produced by members of these associations and there is no reason why they could not have their operation methods and markets uniform as is the case with other agricultural industries.

The Washington Berry Growers' Association has its office at Sumner, a town only a few miles from Tacoma. It is in the heart of the well-known Puyallup valley which is known for its excellent quality of soft fruits. The fruit is grown under ordinary cultivation methods although there are some growers that are installing irrigation systems in order to bridge over the dry season of July and August.

The association has a membership of close to 500 growers who have a total acreage of approximately 1,200 acres. No new members are taken in except those who are actual berry growers and scratch their name off the rolls if there should come a time when they sell out or go into some other kind of farming.

Officers of the association are: E. C. Orton, Sumner, president; F. W. Hoyt, Puyallup, first vice-president; W. G. Powell, Puyallup, second vice-president; J. A. Forehand, secretary-treasurer, and F. H. Krugg, manager.



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FOLLOW the example of the farmer shown at the left in this illustration and equip yourself with a speedy reliable International Speed Truck. In the past year or two, while thousands of McCormick-Deering dealers have improved their service with "Red Baby" Speed Trucks, up-to-date farmers in all sections have invested in the same kind of efficient haulage.

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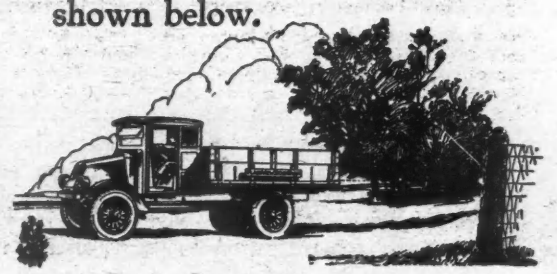

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NATIONAL ELECTRIC LIGHT ASSOCIATION

IT HAS been my custom for the past twelve or fourteen years to clip items from Green's and the AMERICAN FRUIT GROWER MAGAZINE, pasting them in a scrap book. This book is an old bill book 12 by 18 by 5 inches thick and nearly filled with good things. In checking up the Good Things in the February issue, I find I cannot paste them in a book for they not only appear on one side but on them both, and I find I have checked so many that I must keep the whole issue just as it came to me. The AMERICAN FRUIT GROWER MAGAZINE is the best fruit paper I take.—W. R. Bradford, Massachusetts.

* * *

JUST a word of congratulation and commendation on your last issue of the AMERICAN FRUIT GROWER MAGAZINE. Mrs. Dunn and I spent the evening going over it last night and we both agree that we have never seen anything so comprehensive and complete and full of general interest for a fruit grower as is this issue. Fruit growers generally ought to extend to you a vote of thanks for the variety, accuracy and detail of the information which you have given them through this medium on matters which every live fruit grower is anxious to know about. Your articles on packing, spraying, fertilizing and particularly on the care to be given and the remedies to be applied to cherry trees affected with shothole fungus last year are of extreme interest and of great value. I cannot express too strongly my approbation of your magazine and our sense of appreciation for the information which you are compiling and giving to us in such concise form.—R. W. Dunn, Pres., Indian Hills Orchard Co., Chicago, Ill.

* * *

MISSOURI and Arkansas have a number of large and strong co-operative berry shipping organizations, such as the Strawberry Growers' Exchange of White County Farm Bureau with its eight shipping stations, handling some 500 cars of strawberries; the Missouri Strawberry Exchange, with its 3,000 growers, handling the 800 cars of strawberries raised on 6,000 acres; the Missouri Fruit Exchange, shipping 200 cars; the Judsonia Fruit & Vegetable Growers' Ass'n of Arkansas, shipping 200 cars, and the Bradsford Fruit Growers' Ass'n of Arkansas, with 100 cars are some of the largest shippers of berries in Missouri and Arkansas.

WITH THE CO-OPS.

WE HAVE jus received a copy of the Manager's Report for the season of 1922 of the Eugene Fruit Growers' Association, Eugene, Ore. This organization is one of the most interesting to study in the United States as they are doing what few associations have attempted to do, that is, namely, dispose of all the fruit which the members produce through manufacturing plants controlled by the association, this organization having its own canneries, dehydrators, dried fruit packing plants, cold storage and fresh fruit departments, cider and vinegar plants, lime-sulphur plant and box factory. This association this past year did $960,000 worth of business, the canned goods department handling $660,000; the dried fruit, $91,000; the ice cream department, $65,000; the box factory, $45,000; vinegar, $13,000; general merchandise, $24,000, and green fruit department, $12,000. The canneries owned by this organization handled this past season 7,826,231 lbs. of vegetables and fruits, the biggest single items being green prunes, canned as plums, 3,121,749 lbs.; loganberries, 647,000 lbs.; carrots, 1,151,000 lbs.; beets, 1,218,000 lbs.; blackberries, 981,000 lbs.; pears, 699,000 lbs. The dried fruit department handled 1,759,000 lbs. of Italian prunes and about 60,000 lbs. of French prunes. The green fruit department packed 18,263 boxes of apples and pears, 9,450 gal. of cherries were put in brine, 32,000 gal. of vinegar manufactured, 48,000 gal. of apple cider, 57,000 gal. of ice cream manufactured and 3,546 tons of ice made. The lime-sulphur plant manufactured 782 barrels, while the box factory cut 1,800,000 feet of lumber during the year. The business of $960,000 was handled by labor costing $149,524, while the office salaries for the three plants of this large business totalled only $14,392.

It was not a bonanza year for canneries, the prices ruling lower in the market than have occurred for a number of years. Nevertheless, the showing to the growers should be very gratifying. The prices paid growers for some of the fruits were as follows: apples for canning, $16 a ton; cider apples, $8; better varieties of cherries, 8c a lb.; No. 1 sour cherries, 7c; gooseberries, 7c; yellow plums, 2c; blue plums, 1c; peaches, 50c a box; pumpkins, $10 a ton; red raspberries, 8c a lb.; black caps, 8½c, and strawberries, 6c. Prices are not complete yet for some fruits and vegetables as the pools were not entirely closed.

RUMORS indicate that the berry growers of the Pacific Northwest, including Washington, Oregon and British Columbia, might form an exchange. A committee has been appointed with a member from each berry organization in the district. W. H. Paulhamus, president of the Puyallup and Sumner Fruit Growers' Association, was chairman of the committee; H. M. Eddy, president of the British Columbia Berry Growers' Association, vice chairman, and Dr. E. S. Barnes, president of the North Pacific Berry Growers' Association, secretary. Organizations which were represented at the meeting were the Washington Berry Growers' Association, North Pacific Berry Growers' Association, Puget Sound Berry Growers' Association, Puyallup and Sumner Fruit Growers' Association, British Columbia Berry Growers' Association, Parkville Berry Growers' and Fruit and Mercantile Exchange of Mission and Hatzie districts.

Oregon, Washington and British Columbia are rapidly becoming the nation's greatest producers of berries, now leading in loganberry and blackberry production and rapidly becoming the center of production in strawberries and red raspberries for canning purposes.

A MEETING was held recently of the Missouri Strawberry Exchange. The president of this organization is A. F. Karbe of Neosho, and W. D. Cowherd is the secretary. The organization went on record as opposing Missouri House Bill No. 560, known as the Bales bill, which is an inspection measure. The association feels that inspection of strawberries is not practical. The crop has to be handled so rapidly as it will deteriorate in such a short time that systems of inspection that might apply on apples and most deciduous fruits are not satisfactory with strawberries.

The exchange expects to handle the largest number of cars of strawberries produced in southwest Missouri this year, which will be the fifth consecutive year that it shipped more than any other organization in the district. The only variety handled is the Aroma. The sales managers are: A. F. Karbe, Neosho; W. D. Cowherd, Purdy; W. Ed. Roark, Anderson, and W. W. Stevens, Neosho. Out of the total of 1,800 cars shipped in 1922, the exchange handled 1,100.

SO MUCH publicity has gone out concerning the reorganization of the Sun-Maid Raisin Growers, that some people are asking, "What's the matter with the Sun-Maid Raisin Growers." The answer is that there is practically nothing the matter. It must be remembered, however, that ten years ago the association was handling about 60,000 tons of raisins a year, with a $10,000,000 turnover but they now handle some 200,000 tons of raisins a year with a $50,000,000 turnover, and that it takes from 20 to 30 million dollars a year to handle such business. The association generally has advanced to its members considerable money. This year it advanced them some $85 a ton. It is therefore necessary with the ever-increasing business that the association arrange its finances so that it can get more working capital. The paid up capital and surplus of the association is only $3,400,000.

The association is doing some reorganizing along the lines suggested by the government to meet every requirement of the government provision for co-operative associations. It has remodeled its staff to a certain extent to meet the ever-increasing business, and it has made arrangements for more capital so that it can meet to the best advantage the problem of moving this huge tonnage of raisins. A new 15-year contract is being used, and this has the provision in it that every second year a grower may withdraw if he sees fit.

The Sun-Maid Raisin Growers have done a service to California that probably no other organization could have done under the circumstances and had it not been for its activities, the raisin industry of California would never have developed to its present high degree of development.

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Auction Market

(Continued from page 5)

plied entirely by sale at auction. The commodity is required to be carefully graded and packed in uniform packages, to be placed on the market in sound condition, and to be delivered in sufficient quantities to permit of auction service at a minimum of expense.

Keep Trade Informed.

The auction companies keep the trade closely informed of the various commodities to be sold, either through the newspapers, printed notices, or by telephone. A catalog which lists the commodities is also printed and distributed. Upon arrival of the products sample packages are displayed for the inspection of prospective buyers, either at receiving points or at the auction display rooms, the buyers being given one to two hours to inspect the product.

The buyers are usually composed of all classes of the wholesale and retail distributing trade. They congregate in the auction room when the sale is opened, and any buyer may bid who is ready to meet the conditions of the sale. Bids are called for on each line until it is sold or withdrawn. On domestic products a credit term of 10 to 15 days is generally allowed by the large companies, while the smaller companies operate on a cash basis. Delivery of the products may be had immediately after a sale is made.

Following the day's business a catalog of the prices paid for each line of goods is published for the information of shippers or their representatives, and account sales are rendered by the auction company within 24 to 48 hours after the sale is closed. The auction company guarantees the accounts of the buyers and bears any loss that may result from default in payments.

An examination of selling costs shows that shippers employing auction receivers who charge the regular 5 per cent commission for selling fruits make no saving through sales at auction as compared with private sales. Out of the 5 per cent commission the auction receiver pays a selling commission of usually 2 per cent to the auction company. Organizations handling a sufficiently large volume of products to permit of the employment of a salaried representative and the maintenance of terminal sales offices incur a selling expense up to 1 per cent of sales. An additional 2 per cent for auction charges brings the total cost to around 3 per cent of sales. Terminal charges ranging from one-third of one per cent to one and one-half per cent of the purchase price are borne by the purchaser.

System Is Growing.

The system seems destined for continued success if past performances during the last ten years count for anything, particularly in view of the present-day swing toward the large scale marketing of farm products. By requiring bulk marketing, and a standardized product, the system has also been an important influence in the co-operative marketing movement now taking place. The auction companies are naturally sold on the co-operative idea, and are making every effort to promote its growth. One of the larger companies is now mapping out a program for a special campaign in this direction, with a view to bringing new lines to the auction rooms.

Almeria Grape Crop

THE 1922 production of grapes in Almeria, Spain, closely approximates the original maximum estimate of 1,600,000 barrels. At the beginning of the season the opinion prevailed in the district, and was circulated abroad, that the crop of 1922 would approach 2,000,000 barrels, but this optimistic prophecy was not borne out by the amounts of grapes actually shipped. The total number of barrels of grapes exported from Almeria in the 1922 season were 1,536,264, as compared with 1,063,647 barrels in 1921.

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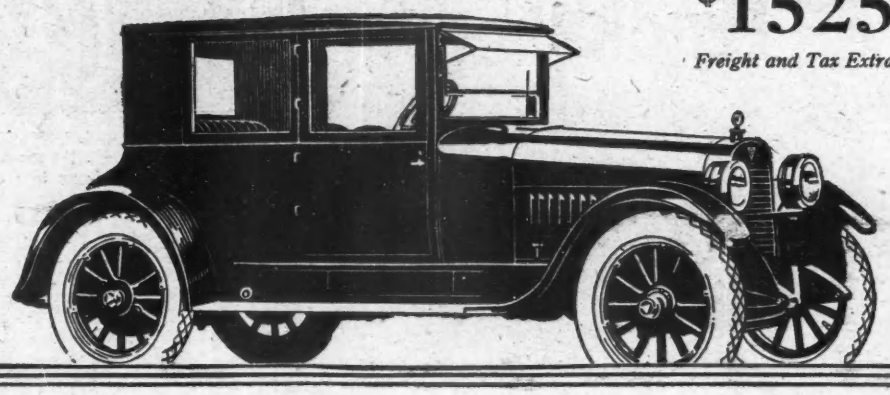

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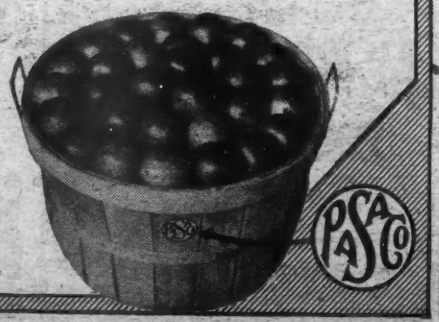
Gives Better Quality and Dependable Deliveries

This not only means better baskets but baskets when you want them and where you want them. This service is worth dollars to you when your crop is ready for market and must be moved quickly.



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MARKETS AND MARKETING

MANY large distributors and shippers are well organized as far as their home offices are concerned but may be weak in their representation at the selling end. It is very essential that the man who comes in contact with the buyer be a high-class salesman. Money so expended brings good returns. Independent growers should leave no stone unturned to obtain the best representation that is possible to get. High-class salesmen can earn relatively large salaries and are worth it. In the long run they are a very cheap investment.

Growers occasionally claim that they have been cheated by their marketing representative. We recently heard of one grower who had to pay an outrageous price for the service he received, but this grower was himself largely to blame. He should make a contract which is clearly understood by all parties, and this should be made before any fruit is shipped. If the receiver is to obtain, say, seven per cent for his services, then the grower should know whether this seven per cent is on an f. o. b. or on a delivered sale. A seven per cent delivered sale is equivalent to about a ten per cent f. o. b. sale. If you are paying on a delivered sale basis, you are paying a commission on the freight and other charges. Be sure and look up the standing of the man who represents you, whether he be broker, commission man or agent, for this is simply good business. It is very easy for you to do this and thus protect yourself. Draw up a contract which is clearly understood by all parties and rarely will disagreeable complications arise.

FLORIDA has pretty well cleaned up its crop of citrus fruits. It is estimated that about 15 per cent of the oranges and 2,000,000 boxes of grape fruit were still left in the state on April 5. Up to date 34,472 cars were shipped, being 6,414 cars more than last season. The first of the Florida Valencias were sent to the market the first week in April. According to reports from the Florida Citrus Exchange, the prices for oranges in the leading markets ranged from $4.50 to $6.75 delivered, while grapefruit was ranging from $3 to $4.75 a box. Lower prices for oranges and grapefruit seem to be the rule in most of the big eastern markets.

The first week in April showed California Valencias about ready to move, the estimate now being about a 26,000 car crop. At the end of the first week in April it was estimated that there were still 5,000 cars of Navels and 1500 cars of other varieties to be shipped out of California.

APPLES have not been keeping any too well in storage and considerable discoloration has been taking place. Likewise some soft rots such as brown rot, penicillium, mucor and other rots have appeared, so that buyers have hesitated in taking hold of large quantities and the tendency has been to buy in limited amounts and move them quickly on a narrow margin.

The apple market has held fairly steady in Chicago. Extra fancy large size Winesaps have ranged from $2.65 to $2.75, the medium sized extra fancy ranging from $2.50 to $2.65. Fancy medium sized Winesaps have brought from $2.40 to $2.50 and C grade $2.10 to $2.25. Some unusually fine Delicious have arrived from the west. These were firm and in good condition and brought from $4 to $4.25. The history of these apples shows that they were placed in cold storage soon after harvesting. Rome Beauties have been bringing from $2.35 to $3 for the extra fancy, while the fancy have ranged from $2.25 to $2.75. Eastern barreled apples, such as A grade Baldwins, Greenings, and Russets have brought from $6 to $6.50, while B grade have ranged from $4.50 to $5.50. The prices for Ben Davis and similar varieties have ranged from $3.25 to $3.50. New York City boxed apples have been selling as low as $1.50 to as high as $4, depending upon size and condition. Barreled Baldwins in good condition and large sizes have ranged from $6 to $6.50, while the poorer stock has brought from $4 to $5.50. Fancy large Albemarle Pippins ranged from $4 to $7 and Winesaps from $4 to $6. Western New York Roxbury Russets, barreled, are being offered at $4.50 f. o. b., and Baldwins from $5 to $5.25 a barrel. Greenings are being sold for around $4.50 to $4.75. Good stock whether barreled or boxed is eagerly sought.

The tonnage of boxed apples from Oregon and Washington during the past year, according to figures furnished by the Department of Agriculture is as follows:

	Mar. 10, '23 to Mar. 11, '22. Cars.	Cars.
Oregon	3,745	6,418
Washington	25,654	31,085

THE southern states have been planting more and more strawberries the past few years and the tonnage this year promises to be the largest for many years. The growth in shipment in strawberries in Florida alone is interesting. Up to March 17th of this year 810 cars had rolled. Up to the same date a year ago 210 cars had been rolled and up to the same date two years ago only 80 cars had been rolled. Early strawberry growing is proving to be a profitable venture in the south.

GENERAL manager, Dwight L. Woodruff, of the Wenatchee District Co-operative Ass'n, in his annual report shows that the association last year handled 2,000 carloads of fruit, which was distributed to 275 cities or markets, including 46 states. Fruit was sent to all states in the Union with the exception of Idaho and Vermont. In addition, fruit was sent to six provinces of Canada besides some fruit being exported to Mexico, Cuba, South America, Denmark, United Kingdom and Alaska. A total of 179 cars of apples were exported. New York City received 207 cars, or 12 per cent; Philadelphia, 80 cars, or 4½ per cent; Boston, 70 cars, or 4 per cent; Los Angeles, 40 cars, or 2½ per cent; Chicago, 36 cars, or 2 per cent. The association is to be congratulated that they did not concentrate their tonnage in simply a few big markets, but got such a splendid distribution.

Like most western shippers, the association suffered from having overripe apples to handle, apples, which had become over-mature because of lack of shipping facilities. The cars took an unusually long time to reach the markets, some cars taking from 24 to 30 days, which is double the usual time.

The assets of the association are now a million and a half, of which $226,000 consists of warehouses and real estate. All current debts and payments on property have been met and a loan of $400,000 made early in the season paid off. The association loaned its members during the season over $129,000, purchased $278,000 worth of supplies and up-to-date has already paid its members over a million dollars.

Pear Statistics

THE following pear statistics were copied from "The Pears of New York" by Hedrick.

Six states produced over 65 per cent of the pears grown in the United States in 1919. The census of 1920 shows that in the preceding year the total crop of the country was 14,211,346 bushels, of which California produced 3,952,923 bushels; New York, 1,830,237 bushels; Washington, 1,728,759 bushels; Oregon, 761,063 bushels; Texas, 637,400 bushels; and Missouri, 430,828 bushels. Trees in all other states yielded 4,870,136 bushels. There were according to this census 14,646,995 bearing trees and 6,051,845 not of bearing age. The yield of fruit was 60 per cent greater than in 1909; the number of bearing trees 3 per cent less, and the number of non-bearing trees 28 per cent less. Compared with other tree-fruits, according to this census, the pear occupies fourth place in value of product, the apple, peach (including the nectarine), and plum (including the prune), in order named, outranking the pear. Probably the orange, grape and strawberry yield greater value to the country than the pear, although the acreage of each of these three fruits is smaller. Commercial production cannot be segregated from the total, but without question the increase in plantings is due to commercial activities, for the development of the canning industry, refrigerator service and better transportation have greatly stimulated trade in this fruit.

In the states in which pear-growing is a commercial industry, commercial orchards are confined to localities in which climate, soil and transportation combine to favor the pear. In New York, for example, pears are grown for market on a large scale in only ten of the sixty-one counties. These, with the number of trees in each, according to the last census are as follows: Niagara, 620,743; Monroe, 384,374; Orleans, 377,371; Columbia, 308,298; Wayne, 305,239; Ulster, 304,158; Greene, 208,885; Oswego, 154,576; Ontario, 121,934; Orange, 96,456.

Over 77 per cent of all the pear trees in the state are in these counties, and 79 per cent of the pears grown in the state are produced in these ten counties. The production of pears in New York for the eleven-year period from 1909 to 1919, inclusive, show the increase and fluctuation in the production of pears in the state for this period. The figures for 1909 and 1919 are from the thirteenth and fourteenth census reports, while those of the intervening years are estimates from the Bureau of Crop Estimates of the United States Department of Agriculture. The yields run in bushels for the eleven years as follows: 1,343,000, 1,530,000, 1,886,000, 1,128,000, 2,016,000, 1,298,000, 1,375,000, 1,675,000, 1,708,000, 1,352,000 and 1,830,237.

Bartlett and Kieffer are conspicuous leaders among varieties in number of trees and in production for the whole country. In the great commercial pear-growing regions of New York and California, Bartlett is the favorite variety, but Kieffer is grown largely also, especially for canners. In the south and in the Mississippi Valley, Kieffer is the leading variety because it is relatively resistant to blight and withstands extremes in climate better than other varieties. For many years after its introduction about 1870, Kieffer was overpraised by both fruit growers and nurserymen. Fruit growers liked it because of its resistance to blight and great productiveness, and nurserymen preferred it to other sorts because it is the easiest of all varieties to grow in the nursery. It is, however, so universally condemned for its tasteless fruits that it is losing its popularity, and is not now as largely planted in competition with Bartlett as it once was. Seckel, Clapp Favorite, Winter Nelis, Beurre d'Anjou, Beurre Bosc, Howell, Sheldon, Beurre Clairgeau, and Garber for the south, are the standard varieties following Bartlett and Kieffer in popularity.

Bartlett is far in the lead of commercial varieties in New York. At present, Kieffer probably holds second place in this state, but its popularity is fast waning and Seckel is nearly as commonly planted, if, indeed, it does not now surpass Kieffer in number of trees. Clapp Favorite, Beurre d'Anjou, Beurre Bosc, Beurre Clairgeau, Duchesse d'Angouleme, Howell, Lawrence, Sheldon, Vermont Beauty and Winter Nelis are all planted more or less in commercial orchards and are the favorites for home use. All of these varieties are susceptible to blight, are a little too tender to cold and have other faults of tree and fruit, so that pear growers in New York anxiously look forward to better varieties. It is hardly too much to say that pear growing can never become a great industry in New York until better varieties take the place of the unreliable sorts that must be planted now.

To some extent, man-governed agencies determine where pears may be grown profitably if the planter is growing for the markets. Pears do not keep long and are easily bruised and transportation must not take too great toll; therefore, handling facilities must be suitable, markets must not be distant and transportation must be cheap and efficient.

Complains About Co-operatives

A SUCCESSFUL Yakima fruit shipper comes back from a trip to the markets and in an interview declares the co-operatives have been holding the fruit so long it is hard for the cash buyers to hang on, and if the co-operatives keep on holding their fruit so long that way one of these times the cash buyers will have to quit.

His prices returned to the growers, he says, will compare favorably with those of the co-operatives, even better. But he has to dig up the cash and then hold the fruit until the co-operatives are ready to let loose.

In other words the co-operatives, which have been steadying the market for quite a number of years and making it possible for the business to continue, have now got to the point, apparently, where they practically make the market as far as this end of the deal is concerned.

Well, that's one of the things the co-operatives meant to do all the time.

And, what with crop advances, financing of materials, and other assistance, the member of the co-operative is usually at least as well off, if not a little better off, than the grower who takes his chances year by year with the cash buyer.

Now, this particular shipper has never been charged with skinning the grower, and has a reputation for fair dealing. He has made enough from his business to accumulate a modest fortune in business property, bank stocks, etc., for which due credit may be given his judgment and management. If he can continue to prosper and at the same time give entire satisfaction to his growers, no one will begrudge him a good big salary for his service.

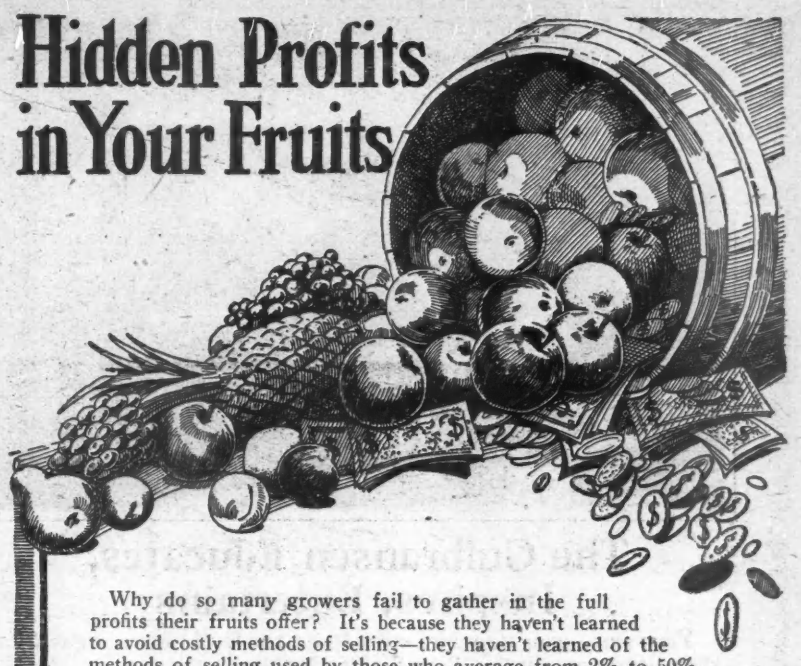
But, in the way of competition, it is customary instead of complaining of the service given by our competitor, to offer something at least as good if not a little better.

The co-operatives know, and so does every one else interested in the fruit business, that control over the fruit as to when it shall be shipped is one of the most important factors in taking advantage of the best prices and best markets. In the past there has been too much fruit turned loose early in the season. Lack of finances, lack of storage facilities, unrestricted competition, all had their part in it.

The co-operatives, and a number of large private shippers, with increased storage facilities and greater financial strength, are now in position to let their fruit go to market when it will do the best, regardless of what someone else does or would like to do.

It is a condition calculated to discourage speculation, but a mighty spur to good service and efficient handling on the part of every shipper.—"Big Y" Bulletin.

Hidden Profits in Your Fruits



Why do so many growers fail to gather in the full profits their fruits offer? It's because they haven't learned to avoid costly methods of selling—they haven't learned of the methods of selling used by those who average from 2% to 50% more for their crops.

The average grower is not getting the full amount he COULD get, merely because he does not heed the experience of concerns like the United Fruit Co.; Florida Citrus Exchange; Porto Rico Fruit Exchange; Stewart Fruit Co.; Frank H. Buck Co.; Thurston Fruit Co., and others, who sell through our public sale. Get out of the rut. Stop doing the same thing in the same old way simply because your forefathers did it that way.

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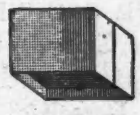

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Leaf Roller

(*Continued from page* 8)

pupal skin is broken and the little reddish brown moth comes out and flies away. The entire life cycle requires from 42 to 50 days for its completion.

The Second Brood.

The second brood of moths begin to appear about the last of May and continue to come out until the middle of June or even later. This brood does not seem to be so destructive as many of the moths are attracted to blackberry and raspberry patches. A third brood also appears in July and August. The two later broods seem to do less damage to the strawberry fields. This may be due to the fact that the injury is not so noticeable at this season of the year.

The attack of the leaf roller upon the blackberry plant is not so severe as the larva rolls or folds only the lobes of the leaves together and consequently does not interfere a great deal with the growth of the plant. In the case of the raspberry the pest feeds upon the growing tips or buds of the plants. The injury may check the growth of the plants and cause the tips to appear brown or rusty in color. The injury on blackberries or raspberries is seldom if ever severe enough to warrant special treatment.

Measures of Control.

Plow under all the old unprofitable strawberry fields as deeply as conditions will permit during the winter in order to bury the strawberry leaf roller in the worm stage or resting stage in the old dead leaves or under the trash and litter of the old strawberry field.

Inspect the strawberry fields daily from about the middle to the last of April and when the moths can be found flying up in considerable numbers, spray the strawberry plants with arsenate of lead at the rate of one to one-half pound to 50 gallons of water. The arsenate of lead may also be used in Bordeaux mixture (4-4-50) 1 to ½ pound to 50 gallons of Bordeaux. Bordeaux mixture is a fungicide and will help to control the leaf blight while the poison will kill the leaf roller. Repeat the spraying in about a week after the first application, and for the best results, a third spraying should be made within a week after the second. If the work is thoroughly done, these three sprayings should be effective. The poisonous sprays may be applied with perfect safety and without injury to the fruit up until the berries are from one-third to one-half grown.

By passing a stick or brush over the strawberry vines, the moths, if present, may be caused to fly up in great numbers. If numerous, it is evident that they are laying eggs on the under sides of the half-grown leaves. Since the little worms feed for a day or two at least on the top side of the exposed surface of the leaf, usually along the mid-rib, a poisonous spray if applied at this time will kill them. It is absolutely essential and important to apply the spray before the worm spins its silken threads and draws the leaves together. Once the leaves are folded together it is difficult to put the poisonous spray where the worm will get it.

It is the worm stage of the insect that does the damage. The moths may fly from one field to another and distribute themselves in this way over the entire community.

As in the control of other insect pests, co-operation among the growers cannot be urged too strongly. Every farmer should try to control the pest and by so doing the insects will seldom be able to do great harm. A close and careful study of the pest by all growers is important.

Manner of Feeding Injurious.

If the strawberry leaf roller did nothing but feed upon the leaf it would do but little damage to the strawberry crop; but folding the leaf together as it does, the circulation of the plant food within the leaf is cut off, and the leaves wither, turn brown and die. When the leaves fail to perform their function of helping to feed the plant, the fruit ripens prematurely, is often small, knotty and worthless. A badly infested field may look as if a fire had run over it and burned the leaves.

If the ground is smooth enough to mow, the strawberry leaves, grass and weeds are often cut, raked, hauled off and burned. This practice will kill many of the rollers and reduce the numbers for the following year.

The strawberry fields are also frequently burned over after harvest when the grass and weeds are mowed and allowed to dry. Burning will also kill many of the insects and this remedy is practiced by many growers but it is somewhat dangerous because the fire may be hot enough to kill the crown of the plants.

The grower should fight the leaf roller every year if the pest is present. He should also remember that spraying is the most important practical remedy that will save the crop in the spring. Spray as soon as the moths are found flying thickly and repeat the application twice at intervals of about a week. The fruit may be sprayed with perfect safety from poisoning until it is one-third to one-half grown.

Strawberries in a young apple orchard, Ozark Region, Missouri.

Australian Advertising

The railroads of Australia are conducting an energetic advertising campaign, displaying well-colored posters with such slogans as keep fit, eat more fruit, delicious health-giving fruit is a necessity not a luxury, and take some home today. The Australian growers are also contemplating an advertising campaign in England, which will amount to about two cents a box, to be shared by the broker, retailer and grower. It is estimated that $300,000 can be raised for this campaign.

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The Orchard Home Department

by Mary Lee Adams

Body and Soul Hospitals

THE Episcopal Church has chosen the apparently psychological moment for launching a movement for the Advancement of Scientific Healing. This movement has been endorsed by many persons eminent in medicine, in religion, in public life, etc. The enterprise may suggest a revival of the Emanuel Movement of some 15 years ago, but the basis of it appears to be different.

The choice of Dr. Edward S. Cowles to study healing, argues a large measure of common sense on the part of the association. Dr. Cowles is the brilliant Director of the Park Ave. Hospital, N. Y. His scientific viewpoint is that we have too long dissociated physical and mental ailments. Experience has taught that they are so closely related that a cure of the body is often impossible without first healing the sick and injured mind.

Frequently there is no further need of physical treatment after the mind is freed from obsessions, often unconscious, for fear, anxiety, suspicion and so on. The records of history show that this interdependence has been recognized from early ages when cures were ignorantly, yet many times successfully, practiced even among savage tribes.

Statistics of the amazing number of persons who, while by no means insane, have mental ailments that hamper their development and dwarf and cloud their entire lives, prove the need for such institutions,— "Body and Soul Hospitals," to borrow a phrase of Dr. Cowles,—as it is proposed to establish throughout the country.

One of the saddest sides of this wide-spread mental disturbance, is the number of young people affected. The period of adolescence, high-school age, produces hundreds of thousands of victims. These are often neglected until the mental balance is permanently destroyed.

Mothers and teachers everywhere, should be on the look-out for signs of morbidness and mental distress at this highly impressionable age. Wholesome, cheerful surroundings, the exercise of sound common sense united with affectionate sympathy, might save innumerable young people from shadowed lives.

Fewer Women at Work

THAT hordes of women entered industry during the period of our participation in the world war, 1917 to 1918, was widely commented upon. It was also generally known that many retired from business after the war. The ten year period from 1910 to 1920, however, holds a surprise in the census figures. The Woman's Bureau of the U. S. Department of Labor recently issued a bulletin that shows the percentage of women engaged in gainful occupations to be smaller in 1920 than in 1910.

This does not mean that actually fewer women are holding paid positions, but that the proportion to the whole number of women in the United States is not so great. Apparently the great decrease during the ten year period in domestic servants—a decrease of several hundreds of thousands, most of whom were women—is the largest factor in this lower percentage.

Instead of women invading the sphere of men in increasing numbers, we find nearly 13,000 more male cooks listed in 1920 than ten years previously. Men cooks are working in restaurants, cafeterias and hotels where many servantless families go to eat. On the farm, we are proud to say, the shortage of domestic servants makes little difference in the home life. Mother is still able and willing to go into the kitchen and turn out meals better than anything the cheap restaurants can furnish for twice the price.

Governor Praises Women Voters

GOVERNOR Silzer of New Jersey, has said some things about the influence that New Jersey women have exercised on legislation in that state, which should encourage all women to take a more active interest in public affairs. He says, "One of the most refreshing things during the recent legislative session, was the presence of disinterested women of both parties, who were working unselfishly for some good cause.

"Never before have the workings of the bosses and politicians been so apparent. All of this stimulated the people of the state to take an active interest in their own affairs. This has been especially true of the women." He notes further that the good things accomplished during the last session of the New Jersey legislature, such as the night work for women legislation and highway reform, were wrung from the legislature by the force of public opinion.

Women are very active in bringing this tremendous force to bear on the legislature. Public opinion carries the same weight in every other state that it does in New Jersey, and women represent a full half of public opinion. In exerting it wisely, their duty and interest go hand in hand. The Governor speaks a deep truth when he says, "We will have really good government wherever the people take government out of the hands of politicians and selfish interests and into their own."

Musings of Molly

WHATEVER a pretty woman puts on is apt to become her. It requires much more taste on the part of the homely woman to appear well-dressed.

An unfortunately fat woman rose and left a laughing group to whom she had been talking. I felt a little sorry for her until I heard one say, "She's better than a tonic. It makes you feel happy just to have her around."

There are two ways to contentment. One is to get everything that pleases you. The other is to be pleased with everything you get. One way or the other lies open to all.

A well-known physician says, "Other things equal, women are happier in silk dresses than in calico." We're not so sure of that. If, for instance, the price were equal, they'd as soon wear the calico. If calico were the more expensive, perhaps they'd actually prefer to wear it.

Emily

by Lizette Woodworth Reese

She had a garden full of herbs,
And many another pleasant thing,
Like pink round asters in the fall,
Blue flags, white flags a week in spring.

Housewives ran in each hour or so,
For sprigs of thyme, mint, parsley, too;
For pans to borrow, or some meal;
She was the kindest thing they knew.

Generous of deed and warm of speech,
Each day in some large-flowered gown,
She went the rounds to sad, and sick,
Saint-humorist to the faded town.

She died at sixty. For a while
They missed her in each intimate spot,
And unaccustomed cheeks grew wet—
They ate, drank, slept, and quite forgot.

Health in Home-Grown Vegetables

HAVE you broken ground for your kitchen garden? Will you plant in it many old favorites and a few new kinds of vegetables as an interesting and perhaps delightful experiment? Maybe you are postponing from day to day hoping for the inspiration to get to work.

There's one sure way of bringing this desirable state of mind to fever point. Open your garden catalogue at the very beginning and scan those pages glowing with the most luscious specimens dreamed of by epicures. By the time you've turned each leaf from A to T, from first Asparagus to last Turnip, there'll be no need to urge you to take the initial step toward the summer vegetable garden by filling in the order blank.

The trouble with the blank is that it's generally too short. Plenty long enough for common sense, but not for the cat-logue-bitten orderer. We are lured along by this delicious dainty, only "10 cts. a pkg.," that gorgeous growth, only 5 cts., until we've run out of bounds and, on adding up the nickels and dimes, we find a formidable array of dollars.

Then begins the less heady experience of cutting down the list to what we really need and can use. That's fun too. It makes one positively hungry to vision those things on one's dinner plate. Impatience grows apace. Finally one goes to the pantry and opens a can of tomatoes in despair.

Better Ways in Later Days

We've traveled quite a distance since the time when farm-house windows were nailed down in autumn and the family from that time on ate, drank and, presumably, breathed in unaired rooms until the blue bird sang.

Still referring to the old folks' tales of that period, we learn that the winter diet had little variety. It consisted of meat, chiefly pork, some potatoes and cabbage, but not much else save for those thrifty farmers who filled the turnip pit and hilled the beets.

Small wonder that a regular spring house-cleaning was as necessary for the human body as for the dwelling itself. The bright joy of warm blue skies, singing birds and blooming flowers, must have been considerably dimmed by the thought of having to swallow those horrid "potions" which doctors loved to prescribe for others.

Fresh Air and Canned Food

Then along came those sisters of mercy, hygiene and canned foods. The first taught the housewife that hermetically-sealed rooms were little better than pest houses. The second taught that hermetically-sealed cans would carry many summer delicacies safely through the winter.

After that, fresh air was allowed to vitalize the lungs both summer and winter. Fruits and vegetables, preserved in jars and tin cans, adorned the table through the coldest months. The lengthening days no longer brought dark visions of a heavy "spring-dosing." One could keep well all the year round.

Fresh Vegetables the Best.

But when the best that can be said for canned foods (and the best is very good indeed) has been said, it must be admitted that they lack a certain sprightliness and savor to be found only in the freshly gathered vegetables and fruits. What we get from the can resembles what we grow in the kitchen garden, only as the decorative tint secured at the beauty parlor resembles the natural sweet flush of health. "You can't tell the difference," is a compliment often bestowed upon both the canned food and the canned color, but we know very well that a difference exists.

Every farm wife should make it her duty and pleasure to see that an ample supply of home-grown vegetables is provided for her household this summer. The palate craves their freshness in warm weather. Even from a health standpoint they excel their canned kindred. Moreover, it is from this summer's garden of fresh vegetables that next winter's supply of home-canned must be drawn.

A Real Economy

So don't neglect to urge your John to make ready a goodly plot of mellow earth whence many gastronomic joys shall spring for the entire family. If he is not the kind to listen to health talks, remember that money talks. As a single instance—tomatoes the year round save many a doctor's bill.

The economy of raising one's own vegetables is apparent. All food experts tell us that we eat too much meat, too little fruit and vegetables. Meat is the most expensive article of diet. If one is to keep the meat bills down and the working men satisfied and hearty, an abundance of appetizing vegetables must compensate for the heavy meat meals three times a day.

Something for Every Week

In planning what to plant, care should be taken to have a reasonable succession from the earliest lettuce and radishes to the latest fall vegetables, so that there shall be no interval without its own savory variety.

Think of health as well as pleasure. Carrots are especially wholesome for the little ones and furnish much iron for rosy cheeks. Spinach is also rich in iron and is the peer of any of the highly recommended leafy vegetables, enjoying the distinction of being called "the broom of the stomach."

Beans may almost be called a vegetable-meat. Even such things as do not rank very high in food and mineral values, may be very healthful if particularly palatable, for it is known that digestion is greatly aided if the food is eaten with relish.

Some Vegetable-Fruits

No vegetable garden is quite complete without melons. These used to be considered fruits and, strictly in confidence, I may say that I still think of them that way, but I never speak of them as fruits because I know they are, scientifically speaking, vegetables. Cantaloupe is, to my taste, the king of breakfast fruits, I mean vegetables.

A fresh fruit or vegetable is essential to starting a warm day just right. Have you ever tried broiled tomatoes for breakfast? Their slightly tart taste is as refreshing in the morning as a glass of ice-cold buttermilk is at noon.

Not so long ago the tomato also was ranked as a fruit. Love-apple was its early name. It was grown as an ornament and considered poisonous, something like the flaunting little flapper of today whom many consider both ornamental and poisonous, but who may prove in time to be a wholesome daily addition to some good man's breakfast table.

A Small Convenient Garden

If you don't know how to cultivate vegetables there are plenty of books and catalogues that will tell you just how to raise them. Here is but one word of advice. Have the kitchen garden handy to the kitchen and let it be as compact as possible. You'll get much better returns from a "little plot well-tilled," and well fertilized, than from a whole neglected acre. The smaller the area the easier it is to care for.

Your garden should solve for you the question that harasses some housekeepers 365 days in the year—"What shall we have for dinner?". It takes no distinguished talent to cook most vegetables well. Many of them are delicious served raw in salads, those ideal hot weather dishes that keep one away from the stove.

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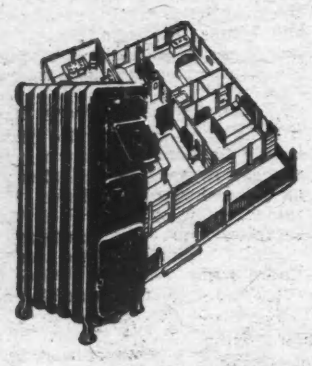

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Chats with Fruit Grower's Wife

by *Hazel Bursell*

Malnutrition Among Children

IF I say—"That child is undernourished," what kind of a picture do you get, Farm Mothers?

A vision of a little, skinny, white-faced, sick-looking boy or girl? Well, not always. It can't be detected as easily as that in the average case.

"But," you say, "I just know it can't be my John or my Mary. Why, they're the healthiest children!"

Percentage Is High.

And I come right back with facts—one out of every three children in the United States is laboring under some physical handicap. Further, the army draft examinations showed that one of five young men were unfit for service because of conditions arising from malnutrition. This means that it is not necessarily some one's else boy or girl who is below par, but that there is at least one chance in three that it's your own child. And one chance in five that he is malnourished!

"But how am I going to know whether or not he is undernourished?" you immediately ask.

The first thing to do is to weigh him and then compare his weight with a weight chart giving the proper weight for his age and height. All children that are as much as seven per cent under weight are malnourished. This degree of underweight means a whole year below normal. If the condition is chronic the child will be stunted in height also. Stunted growth then is the surest and easiest way to identify the malnourished child.

Lacks Disease Resistance.

The malnourished child "takes" everything that comes along—that is, he has little or no resistance to disease. He lacks the animal spirits and is more easily fatigued than the normal youngster. He usually has anaemia, indicated by the lack of color in the complexion due to too few red corpuscles in the blood.

Bad breath, furred tongue, and rough hair are other signs to look for. Nervousness, restlessness, irritability, lack of self-control and the power of concentration, and flabby muscles are also recognized symptoms.

Now that you know what signs to look for, check over your youngsters carefully for cases of malnutrition. Don't be deceived by clothes and round faces in this "looking over" process either. They may look all right when dressed, but really be undernourished.

Food Is Common Cause.

The next thing to do is to find out the cause, and remedy it in each particular case.

The ordinary and most common cause of malnutrition is a deficiency in food in quantity or quality. Poor assimilation of food due to bad mastication, bad teeth, hurried meals, an excess of liquids, or tea and coffee, is another big factor.

A deficiency in the supply of oxygen in the body as a result of bad air, nasal obstructions or circulatory defects due to heart trouble or lack of red corpuscles is another cause of malnutrition. Nervousness, due to lack of sleep, late hours, irritation, and constant overwork causes the tissues of the body to be destroyed faster than they can be built up, and finally results in malnutrition.

Food is the most important item, however, as it is the foundation of many of the other causes. But one thing is certain—malnutrition cannot be cured except with good food and plenty of it.

Too Many Sweets.

Some of the contributing causes are too many sweets, irregular meals, uneven amounts at various meals, too long a time between meals, and insufficient breakfast.

A large percentage of the 8,000 children tested who were undernourished showed adenoids and heart murmurs as compared to a small percent with these defects among the well-nourished children. Tuberculosis, rickets, and ear troubles showed a corresponding variation. In another test 68% of the mentally defective children were undernourished.

These facts would tend to show that either malnutrition may cause other defects, or is caused by them.

Good Nutrition Program.

The program which is being advocated to lessen malnutrition among school children has been tried out and proven highly successful. It includes a mid-morning lunch at 10:30 and a mid-afternoon one at 3:30—wholesome but not too heavy. The child should have from 10 to 11 hours' sleep daily, and, if possible, a regular daily rest period lying flat without a pillow. His activities and studies should be limited till he catches up in weight. Neither music nor summer studies should be given the undernourished child.

Any mother can oversee and correct these things herself when she finds out their causes and recognizes the trouble. Much more rapid progress can be made in the work if the child can be interested in improving his health. Weighing at the same hour each week will help arouse his interest, as will carrying on the work through groups as in schools or clinics, and bringing out comparisons. In this way his pride is appealed to.

You Don't Have to Buy High Priced Linens

NOW that spring is almost here, the thrifty housewife is conjuring up a vision of housecleaning, freshly painted woodwork, nice crisp curtains, and new household linens.

We are going to talk about the household linens this time—"the last shall be first," you know. And our talk isn't going to be about beautiful French and Belgium linens at millionaire's prices—"Good looking linens at small cost," is its theme.

Linen Sheeting Often Used.

Linen sheeting in widths suitable for large tablecloths will be found an attractive and durable substitute for damask. A simple decoration of embroidered initials or monogram, or hemstitching adds much to its beauty. Like all linen fabrics it improves with each laundering.

Dress linen in 36-inch width can be used for the lunch and breakfast set. Colored appliqued hems and figures or colored crocheted edges are quickly done and add much to the appearance. If used in cream or unbleached linen, a variety of good color combinations may be made.

For the small family, crossed runners of linen crash, decorated at the ends only, are practical and easy to launder.

Indian head in linen finish provides a possible substitute for linen itself, but it does not launder as easily as linen.

Unbleached Muslin Pleasing.

Unbleached muslins make up into pleasing but inexpensive luncheon cloths for the bungalow or farm home. Any number of trimming methods can be used, bright embroidery, cross stitch, appliques, and cretonne borders being the most popular. The small napkins can be made to match.

Japanese cloths and napkins with their blue floral and bird designs are inexpensive and make an attractive looking table. Plain ginghams bordered in pin checks are also used, as are white cotton crepes with crepe borders in contrasting colors.

Save Time and Money.

Small tablecloths and napkins have a distinct advantage over the large damask cloths of twenty years ago. The beauty of the old-time linen can-

not be questioned, but many housewives are finding that the lower cost at first and the ease in laundering and the time saved in ironing compensate them for the loss of Irish and French damask.

Six Requirements for an Adequate Diet

FARM housewives are considered the best cooks in the world, so far be it from me to try to tell any of you how to cook. You probably wouldn't listen anyway! But "What to cook" —there's magic in the very phrase!

Now, of course, I don't propose to give a long list of menus for several weeks or even days. That wouldn't be possible because foods vary in different sections and family tastes and purses differ even more, and besides it would be most uninteresting. Our little talk will merely take up a few of the fundamental principles of meal planning and suggestions for their application.

Requirements Listed.

To begin with there are six requirements for an adequate diet.

1. Sufficient protein foods for tissue building. Foods rich in protein are lean meats, fish, cheese, milk, egg white and beans. Most American diets are too rich in this class of food, one dish of any one of these being plenty for a meal.

2. Sufficient fats and carbohydrates (sugars and starches) to furnish heat and energy. Fat meat, egg yolk, cream cheese, nuts, butter, are the main sources of fat. Most of us can't overload on fats or our "tummies" rebel. Nearly all fruits, vegetables and cereals are very high in sugars and starches. We get the most from bread and potatoes. Overeating of carbohydrates is a sure-fire method of putting on avoirdupois, in almost every case, it should be mentioned here, perhaps.

3. All three vitamines—anti-scorbutic, the one preventing Beri Beri and nervous disorders, and a third preventing eye trouble. The lack of one of them will stop the growth of young animals and children. Fat Soluble A is found, as we mentioned last month, in the yellow fats—butter, cream, suet, cod liver oil—green leafy vegetables as spinach and alfalfa, colored root vegetables as carrots, sweet potatoes and beet tops, tomatoes, yellow corn and egg yolk.

The second vitamine—Water soluble B—is abundant in unmilled cereal, nearly all fruits and vegetables, yeast, lemons, oranges, prunes, spinach, cabbage, carrots, raw potatoes, tomatoes. It is very stable to heat of cooking, canning and drying processes.

The third vitamine, Water soluble C, is found almost entirely in fresh vegetables and fruits as it is destroyed by heat. Oranges, lemons, green leaves and cabbage are good for it. Tomatoes are high in all three vitamines.

4. Minerals ,especially calcium, phosphorus and iron needed for tissue building. Almonds, white beans, and cheese are high in all three. Cottage cheese, figs, carrots, turnips, cauliflower, milk, molasses and oranges are rich in calcium, needed for bones and teeth. The phosphorus content is high in lean beef, cornmeal, rolled oats, peas, peanuts, salmon and walnuts. For iron serve eggs, figs, molasses, rolled oats, peas, potatoes, spinach, raisins, beets, prunes and whole-wheat bread.

5. Plenty of water. Ten to twelve glasses a day, including the liquids eaten in soups, etc., is the accepted standard.

6. Body regulating materials, including minerals, water, fruit acids, roughage to give bulk, and gas-forming foods.

In general then we need: Some cereal food every day, a meat or some protein food at least once a day, one vegetable besides potatoes, a fruit every day, 10 to 12 glasses of water, one uncooked food each day, and at least a pint of milk for each child per day.

Some Good Strawberry Recipes

STRAWBERRIES! How the very mention of them makes our mouths water! Personally, you can't feed me too many, and I think that most human beings are just alike on that score. This month we are offering strawberry recipes, to give the housekeeper some new ways of serving them, as well as a few time-honored favorites. I especially commend to you the strawberry sun preserves—there is nothing like them—and the strawberry pie and ice cream.

Strawberry Shortcake.

Mix up a short biscuit dough, roll on floured board rather thin. Shape to fit baking pan, and butter top slightly. Put in baking pan and put another thin layer on top. Bake in a quick oven, split and cool somewhat. Butter slightly while hot.

Select choice ripe strawberries, hull and wash in colander. Crush and sweeten to taste. Let stand for a few minutes and then spread on either one or both layers of shortcake, placing layers on top of one another. Serve with rich cream or whipped cream, if desired.

If the family prefers a richer dough may be made by adding ¼ cup sugar, more butter, and a few grains of nutmeg to the biscuit recipe.

Strawberry Sun Preserves.

Use fine berries and an equal quantity of sugar. Dissolve the sugar in just enough boiling water to melt it thoroughly. Then put it over the fire and cook until it will almost thread when a spoon is lifted from it. Do not stir while boiling.

Put in the berries and cook 15 minutes after they have begun to boil. Do not stir at all if it can be avoided.

Then pour the syrup and berries out on large platters and stand in sunshine all day, covered with panes of glass or mosquito netting. Do not exclude the air. Take the fruit in at sundown and return to the sunshine the next day. If necessary, place in the sunshine a third day.

When "preserved" the syrup should be rich and thick and a ruby color—the berries will be whole and perfect and almost transparent when finished.

Fruit Punch.

1 cup grated pineapple.	1 quart sugar.
2 cups water.	1 pint strawberry juice.
1 cup tea.	5 quarts water.
Juice 5 lemons.	1 bottle charged
Juice 6 oranges.	appolinaris water.

Boil the sugar with a pint of water 6 minutes. Cool and add the rest of the fruit juices. Add appolinaris water just before serving. This recipe makes sufficient for a large number of guests.

Fruit Souffle.

1 cup strawberry pulp, sugar to sweeten.

4 egg whites, beaten stiff.

Mix fruit pulp and sugar and fold in egg whites. (Do not stir.) Bake in small cups set in water.

Strawberry Bavarian.

3 cups crushed, ripe strawberries.
1½ cups sugar.
2 tablespoons gelatin.
6 tablespoons cold water.
2 cups whipped cream.

Soak gelatin in cold water until swollen, then melt by setting over hot water. When gelatin is fluid, stir into sugar and strawberry. When this mixture is syrupy fold in beaten cream and chill. Serve with whipped cream. This is a very rich desert.

Strawberry Ice Cream.

1 pt.milk.
½ pt. cream.
1 cup sugar.
1 pt. strawberries.

Crush strawberries, add sugar and allow to stand 15 or 20 minutes. Strain and use only juice and pulp which passes through strainer. Combine all ingredients and freeze as for any other ice cream mixture.

Strawberry Pie.

Line a pie pan with pie dough, fill with hulled, washed, ripe strawberries, sprinkle with about ¾ cup sugar mixed with 2 tablespoons flour to thicken. Put on the upper crust and bake in a hot oven, which is cooled down towards the last to allow the juice to thicken.

Strawberry Preserves.

2 lbs. berries. 1 cup berry juice.
1½ lbs. sugar.

Pick over the fruit and put together all the firm and perfect berries. Slightly heat, crush and strain the others to obtain the juice. Make a sirup of the sugar and juice, bring to the boiling point, remove from the fire and cool before adding the berries. Add the berries a few at a time. Place again over the fire and heat slowly to boiling. Cook rapidly to 106 degrees centigrade or 223 degrees Fahrenheit.

If a thermometer is not at hand, cook until the berries are bright and transparent. Cool and pack cold in jars, which have been previously boiled. Process at simmering temperature, to give best results in color and flavor. For 12 oz. or pint jars at this temperature, process for ½ hour. Other berries may be preserved in the same way.

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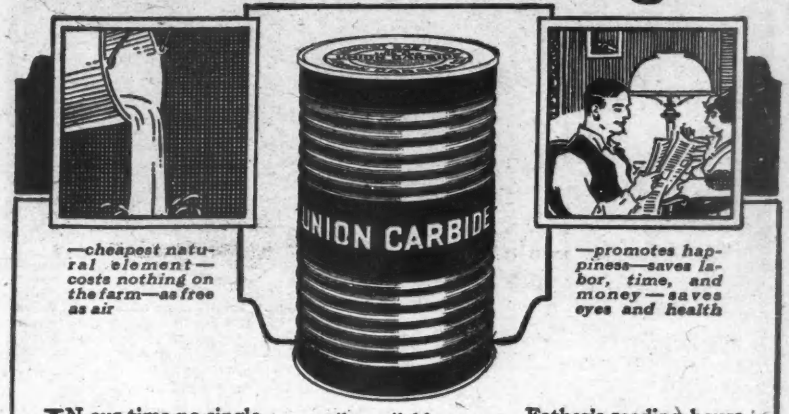

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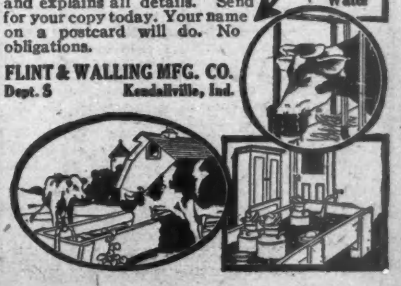

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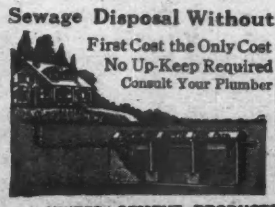

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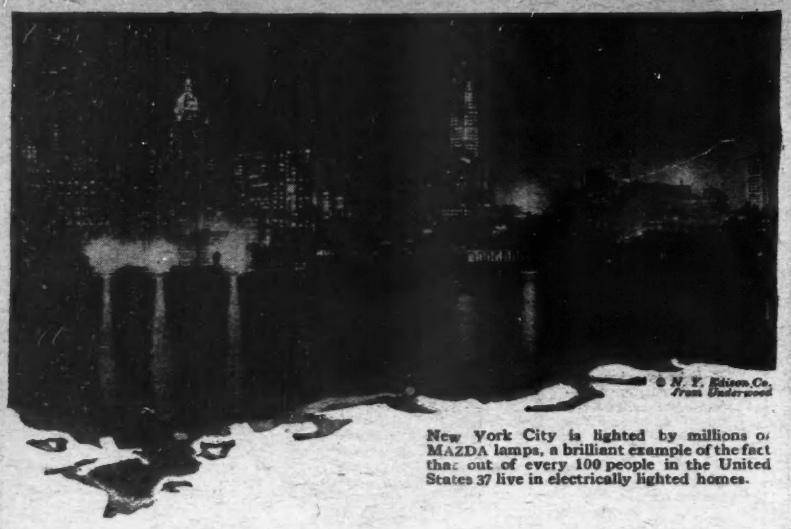

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wheels of the truck to cut in entirely under them, providing for as short a turn as is desired. It is necessary to have a "fifth wheel" on the truck for the bolster to turn on or the poles would be split off on the turns.

Handy Equipment for Strip Cultivation.

Many young orchards are sowed to cowpeas or soybeans in May or early in June. This is too early to stop cultivation and the strip around each row is usually cultivated with a one horse cultivator. A seven tooth cultivator with a wheel in front to keep it from diving in and out of the ground makes a good tool. By using a twenty inch sweep on the shovel arm next the row, nearly the entire strip can be kept cultivated. By lengthening the tugs on the harness the cultivator can be more easily swung in under the tree after the horse passes it. A whiffle-tree not over twenty inches long will cut down the chances of "skinning" trees. If the workman has a tendency to be careless in this respect it is well to require him to wrap the outside arm of the cultivator and the end of the whiffle-tree next the row with a piece of burlap sack.

Manure Hooks Vs. Hoes.

Many orchards are planted on ground too hilly to cultivate without serious erosion. It is often difficult to buy straw enough to mulch a large orchard, and many times, especially while the orchard is young, the trees are hand cultivated. This work is usually done with hoes. After the ground is well loosened around the trees with hoes, it will save a great deal of time to use long handled manure hooks in place of the hoes. These hooks are similar to potato hooks, except that they are heavier and wider. They give as good a dust mulch around the trees as a hoe and cover the ground about three times as rapidly and with less exertion. One great objection to hand cultivation is that the average workman has a never failing tendency to cultivate a smaller and smaller circle around each tree. Try notching his hoe handle to give him the radius of the circle you want kept under cultivation. At least it may save an argument, when he is sent back over his work to widen the circle.

Ready
when you need it most

To be effective, spraying must be done not only when conditions are ripe but with the proper equipment. Not to have a spray rig ready and powerful enough to do the job right is to risk a heavy loss.

The fruit grower whose sprayer is Hercules equipped has dependable spraying power—an engine that is guaranteed, that always gives a steady pressure of 200 to 250 pounds, and that will not go wrong when the job is half finished.

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The Hercules Corporation
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HERCULES ENGINES

Cayuga, a New Pear

A HIGH quality pear with more resistance to blight than any of the standard commercial sorts now grown in the State has long been the aim of the pear breeding work in progress at the New York Agricultural Experiment Station at Geneva. The Station horticulturists announce that out of more than 2,000 seedlings tested by them only 8 Seckel seedlings have given sufficient promise to merit further testing. One of these, named Cayuga by the Station workers, is now being distributed by the New York State Fruit Testing Co-operative Association, Inc., for further trial.

Resembles Seckel.

"As grown on the Station grounds, Cayuga seems to be about all that could be desired in tree characters," says the Station horticulturist. "The young trees are vigorous, healthy, and free from blight, altho this does not necessarily mean that the new variety is blight proof. It will take years and plantings under many conditions to determine this point.

"The fruit of Cayuga averages as large as that of Bartlett, altho in shape it resembles Seckel and in color Clairgeau. The quality of the new variety is better than that of any standard sort except Seckel. The flesh is firm and fine in texture quite to the center, and the flavor is the rich, delectable flavor of Seckel, although Cayuga is not quite so spicy as Seckel.

"Of all fruits, it is most difficult to predict whether a new pear will make its way in commercial culture, and about all that can be said of Cayuga is that it is well worth trying."—N. Y. Agri. Exp. Sta.

935 C H-1

Increasing Efficiency of Orchard Operations

(*Continued from page 8*)

are in evidence. When used in this way a large per cent of the mice in the orchard are immediately destroyed but the remaining grain soon loses its coat of poison. In order to provide year-around traps in which the grain is kept dry and deadly at all times it is a good plan to purchase some wide mouthed bottles for the grain traps. Place a bottle under every other tree. Old tin cans are sometimes used after crushing them nearly flat at the open end. Containers of this sort protect the grain securely against birds, and can be refilled from time to time. Following is one of the best poison grain formulas.

Mix 1 tablespoonful of gloss starch in ½ teacup of cold water, and stir into 1 pint of boiling water to make a clear paste. Mix 1 ounce of powdered strychnine with 1 ounce (1 tablespoonful) of baking soda, and stir with the starch to a smooth, creamy mass free of lumps. Stir in ¼ pint of heavy corn sirup and 1 tablespoonful of glycerine. Apply to 12 quarts of wheat, free of dirt and chaff and mix thoroughly to coat each kernel.

A Vinegar "Trick."

After cider has progressed through the hard cider stage it is a good plan to siphon it off, throw out the sludge and clean the barrel. The action can then be speeded up by placing a few quarts of the hard cider in a large wooden tub and adding a pint of good strong vinegar. Keep this tub in a warm room. In a few days a thick scum of ("mother") acetie acid bacteria are formed. This "mother" is then dropped into the barrel or barrels of hard cider. Holding the temperature of the cider at about 60 degrees will hasten the action of the acetie acid fermentation.

A Cheap Labor Saving Brush Wagon.

The brush picking and hauling is a big job in a large orchard. A brush wagon used by the Simpson Orchard Company, Vincennes, Indiana, will be of special interest to many growers. It consists of a large set of trucks with wheels about 2 feet high. Two poles about twenty feet long are bolted securely to the bolster over the trucks. The poles are held apart by two sections of two by fours nailed to the under sides of the poles. The lower ends of the poles drag on the ground. Two stakes are set upright in the lower ends of the poles. All that is necessary to dump the load is to pull out the stakes and drive out from under. In the peach orchard a shorter set of poles is used. The bolster to which the poles are attached is high enough to allow the

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Michigan Plants

(Continued from page 6)

conveyor to be carried to the stacking space. The upper section is used to convey the fruit from the stacks to the sizing machine.

If the fruit is packed in baskets, there should be tables near the packing ends of the sizing machines on which the baskets are placed while the face is being ring-packed and the covers fastened in place. Roller conveyors are sometimes used for this purpose instead of tables. They save considerable lifting of baskets and are as convenient otherwise. A hydraulic press should be installed in every packing house where considerable numbers of barrels are packed. They save time in heading and do a better job.

The Michigan exchanges keep each grower's fruit stacked separately until it is run over the sizing machines. The machine and bins are cleared of all fruit and tally counters at each packer's station are turned back to zero before the next lot is started over the machine. Then the grower's fruit is sized and a record made of the number of bushels of cider stock, canning stock and of each packed grade of the variety. This involves some loss of time, the amount depending on the number of varieties grown by the members of the exchange, but the system is very fair to producer and exchange alike.

Costs of Packing.

The cost of packing will vary in different plants, but in general the cost of packing apples in barrels is in the neighborhood of 25 to 30 cents and in bushels about eight cents per package. This includes all costs of operating the packing houses but does not include cost of the container. An additional charge of ten cents per bushel is customary for handling culls over and above the costs mentioned above.

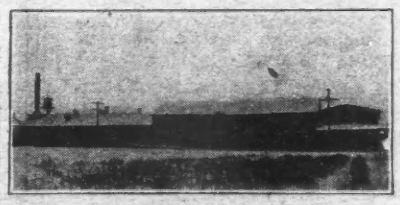
Because of the great diversity of the fruit industry in the Michigan "fruit belt," packing operations must be conducted over a very long season. However, the amount of labor required in a widely diversified fruit section is far from constant throughout the season as shown by the labor chart of the Fennville Fruit Exchange. This chart shows that it would be an advantage to the exchange if the members of that exchange could plan future plantings of fruit in such a way as to provide more fruit for the packing house during the middle of September and possibly less during late

New packing house and storage plant, South Haven, Mich., Fruit Exchange.

August and early October. Mr. J. A. Barron, the manager of this Exchange, is strongly urging the members to plan future plantings accordingly.

The Fennville Fruit Exchange has recently partially solved the help problem by building a bunkhouse with modern conveniences. This not only aids in securing the necessary help but provides a higher class of labor that remains throughout the season.

It is customary for most Michigan fruit exchanges to handle for the members such supplies as fertilizers, feeds and spraying materials and for these a warehouse is provided. A few of them operate canneries but in most shipping points the canning factory is operated privately but is located near the exchange. The state is very poorly supplied with cold storage space but several of the exchanges are seriously contemplating the building of storage plants. The need of storage plants at shipping points has been felt for some time. On the other hand, since precooling plants have proven such a success the idea of building cold storages with a few rooms equipped for precooling the more perishable summer fruits is receiving



Co-operative packing house and canning factory at Hart, Mich.

serious consideration by most of the co-operative organizations in the more diversified fruit sections.

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Field Mice

IN SOME sections of the country field mice are a serious problem. This is apt to be true in alfalfa sod and in many clover sods, and it is more apt to be true in orchards where there is considerable litter on the ground in the winter than is true in cases where the orchard is clean tilled. Some growers have lost entire orchards from mice. I have known of areas of orchard 6 to 8 acres in extent to be entirely ruined by mice. They follow down the main roots and girdle them, chewing off about all the bark, and will kill young trees.

Hoeing and cultivating strips around the trees helps somewhat. Destroying litter or material in which the mice can hide is of some advantage. Very thorough and efficient cultivation in early spring is of some good. Where mice are bad it will be necessary to make a very careful inspection. Have several men walk down between the rows of trees, examining the ground very thoroughly for the burrows or evidences of the activities of the mice. A poison mix can be used to pretty good advantage. This consists of a half peck of wheat, ½ ounce of strychnin, 1¾ pints of water, and about 4 pounds of sugar. The water, sugar and strychnin should be boiled together for ten to twenty minutes. Then add the wheat and boil for just a few minutes longer. After removing from the fire, the mixture should be very thoroughly stirred so that the wheat can become entirely coated with the poison mixture. This vigorous stirring is an important point in order that good distribution may be given the poison. It is claimed that birds or chickens are not poisoned by such a mix. A small amount of this poisoned wheat can be placed in each burrow and the portion covered with a little litter which will tend to attract the mice.

If the subscriber paid direct

Suppose that every Monday morning all the people who have a hand in furnishing your telephone service came to your door for your share of their pay. From the telephone company itself, would come operators, supervisors, chief operators, wire chiefs, linemen, repairmen, inspectors, installers, cable splicers, test-boardmen, draftsmen, engineers, scientists, executives, bookkeepers, commercial representatives, stenographers, clerks, conduit men and many others, who daily serve your telephone requirements unseen by you.

There would be tax collectors to take your share of national, state and municipal taxes, amounting to over forty million dollars. There would be men and women coming for a fair return on their money invested in telephone stocks and bonds—money which has made the service possible.

Then there are the people who produce the raw materials, the supplies and manufactured articles required for telephone service. They would include hundreds of thousands of workers in mines, smelters, steel mills, lumber camps, farms, wire mills, foundries, machine shops, rubber works, paint factories, cotton, silk and paper mills, rope works, glass works, tool works, and scores of other industries.

When you pay your telephone bill, the money is distributed by the company to the long line of people who have furnished something necessary for your service. The Bell System spares no effort to make your service the best and cheapest in the world, and every dollar it receives is utilized to that end.

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For small or large car this is a big-mileage, easy-riding, sturdily built tire. It has a deep cut button tread that gives real protection on wet roads and adds to its life in service. Its long mileage is satisfactory mileage because of its freedom from interruption.

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CORD TIRES

They Like Us

I HAVE been a subscriber and reader of the AMERICAN FRUIT GROWER MAGAZINE ever since it first appeared, and I was a subscriber to "Green's Fruit Grower" years before the change, and I beg to state that the AMERICAN FRUIT GROWER MAGAZINE is a most valued publication to me and is a big help to me. Frequently articles appear in some issues that alone are worth more for the knowledge and information they impart than the price paid for years of subscription, and let me give you and the editorial staff nothing but words of praise as an inspiration to you all for the good work in putting out so valuable a publication in the interest of horticulture.—John H. Griffith, Maryland.

* * *

I HAVE received my first copies of the AMERICAN FRUIT GROWER MAGAZINE, September and October. It is my contention that this magazine is so valuable to any person interested in fruit farming that I would consider it indispensable. So much do I think of it that I am going to ask you to forward the first eight issues of the year, namely, January through and including August, so that after I have received the December issue I can have the twelve issues of 1922 bound in book form.—J. A. Dutaux, Missouri.

* * *

MAY we congratulate you on the make-up and general merit of your publication? It is a credit to your organization and to the business you represent.—E. R. Waite, Sec., Shawnee Board of Commerce, Shawnee, Okla.

* * *

I WISH to take this opportunity to praise your most valuable magazine. I have received only two issues but must say that I am more than repaid if I never receive any more issues for the information I have already received.—A. H. Ellerman, Ohio.

* * *

I BOUGHT an AMERICAN FRUIT GROWER MAGAZINE the other day in Wenatchee and I got more information from it than from all of the meetings ever held here.—William Smith, Washington.

* * *

I JUST received the March issue of the AMERICAN FRUIT GROWER MAGAZINE. I think you have a mighty fine magazine but I wish it would come weekly instead of monthly.—G. E. Smith, New York.

* * *

THE February issue of the AMERICAN FRUIT GROWER MAGAZINE is surely a dandy. It will not be long before the AMERICAN FRUIT GROWER MAGAZINE will be the Saturday Evening Post of Horticulture.—Earl Pearcy, Oregon Growers' Co-op. Ass'n, Salem, Oregon.

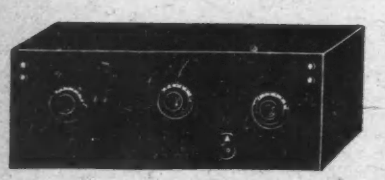
* * *

THE February issue arrived yesterday. I am certainly surprised at the extent of your spray programs. Although I have not had time to look this issue over much, from first glance it does not look as though any important fruit growing section of the country had been overlooked, at least there is something near enough to cover their troubles. I hasten to congratulate you on such a fine piece of work. I feel very sure nothing like it has ever been attempted before; if so, I have never heard of it. The cover also is very attractive.—M. O. Evans, California.

* * *

THE February AMERICAN FRUIT GROWER MAGAZINE has just reached my desk. It is a corker and I can appreciate the fact that it has taken a lot of work to get up an issue of this kind. I venture a guess that this issue of the FRUIT GROWER will not be destroyed but will be held by thousands of people. You are to be congratulated on the steady improvement that is being shown in the FRUIT GROWER and I expect to see it reach one hundred pages some of these days.—A. B. Howell, Stark Bros. Nurseries, Louisiana, Mo.

A RADIOPHONE!
—WANT ONE?



Of course you do. Here's your opportunity to save money and have the real enjoyment that comes to all diligent makers of things.

The fascination and self-instruction of building a radio set has undoubtedly appealed to you, but you hesitated, fearing the storage battery and your lack of knowledge on the subject.

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The new WD-11 tubes, requiring but a single dry cell to heat the filament, has opened up a whole new field in Radio. It has now been brought within the reach of vast numbers who could not even consider it before.

We have prepared a complete set of blue prints and instructions which will enable anyone without knowledge of electricity or Radio to construct his own set in one or two spare evenings at home. It does not require converting the home into a workshop or the need for especially designed tools.

No extra material necessary. We have prepared a standard package containing every item necessary to build your set. One of the special features is a drilled panel that simplifies the construction immensely. It is drilled so that everything in the blue prints, material and panel match perfectly. The blue prints and instructions have been carefully designed by a Radio Engineer who has kept in mind the viewpoint of the man who understands very little about Radio. They are clear and accurate. Our aim is to give you the best information and best material in order that you may get the best results.

The set when constructed is of such a type that it will, under proper conditions, receive up to one thousand miles. It is a set that you may well be proud of when you have it finished, and it would cost you easily three times as much if purchased already constructed.

We have prepared, for immediate shipment, a complete set, including aerial outfit, a WD-11 tube, batteries and a beautiful cabinet. You will not need to purchase an additional item.

The list price of this material is over $70. We will ship you the complete outfit, including set of blue prints and instructions, for ony $47.50. We pay the express.

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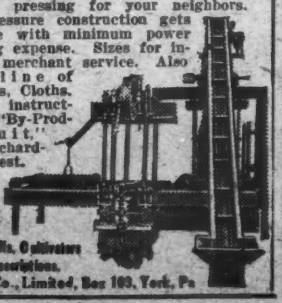

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1590. Jacquette Blouse.
The pattern is cut in sizes 16 years, 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 1¾ yards 40-inch material with ¾ yard 27-inch contrasting.

1703. Popular Long Waisted Frock.
The pattern is cut in sizes 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 3⅝ yards 36-inch material with ⅝ yard 36-inch contrasting.

1303. Slenderizing Undergarment.
The pattern is cut in sizes 36, 38, 40, 42, 44, 46, 48 and 50 inches bust measure. Size 36 requires ⅞ yard 36-inch material.

1722. Slenderizing Lines for Full Figures.
The pattern is cut in sizes 36, 38, 40, 42, 44 and 46 inches bust measure. Size 36 requires 4 yards 40-inch material with ¾ yard 36-inch contrasting and 3 yards ribbon for sash.

1716. New Apron Style.
The pattern is cut in sizes 36, 40 and 44 inches bust measure. Size 36 requires 2¼ yards 36-inch material with 7 yards binding.

1700. Serviceable and Attractive House Dress.
The pattern is cut in sizes 36, 40 and 44 inches bust measure. Size 36 requires 3⅝ yards 36-inch material with 5¼ yards binding.

1702. Charming Afternoon Dress.
The pattern is cut in sizes 16 years, 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 3⅝ yards 36-inch material with ¾ yard 36-inch contrasting.

1662. Are You a Bit Stout?
The pattern is cut in sizes 36, 38, 40, 42, 44, 46 and 48 inches bust measure. Size 36 requires 4⅜ yards 44-inch material with ½ yard 15-inch contrasting for vest and collar facing.

1164. Sailor Suit for Small Boys.
Straight trousers that button over the sailor waist with large pearl buttons lend a very smart air to this new style for a boy's suit.
The pattern is cut in sizes 2, 4, 6 and 8 years. Size 4 requires 1⅝ yards 36-inch material with 5¾ yards braid.

1130. Smart Gingham Frock.
The pattern is cut in sizes 6, 8, 10, 12 and 14 years. Size 8 requires 2¾ yards 36-inch material with ¼ yard 36-inch contrasting.

1715. School or Sunday Dress.
To make this style, you could use cotton crepe, eponge, ratine, taffeta or crepe de chine, of course selecting the material most appropriate for whichever wear the dress is intended.
The pattern is cut in sizes 8, 10, 12 and 14 years. Size 8 requires 2⅝ yards 36-inch material with ⅝ yard 36-inch contrasting.

1656. Neat House Dress.
Even if one knows little or nothing about sewing, this house garment creates no great sewing problem because the sleeves are in one with the long waist. The neckline is becomingly finished with a collar of the same material as that used for the skirt.
The pattern is cut in sizes 34, 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 2 yards 36-inch material with 1¾ yards 36-inch contrasting.

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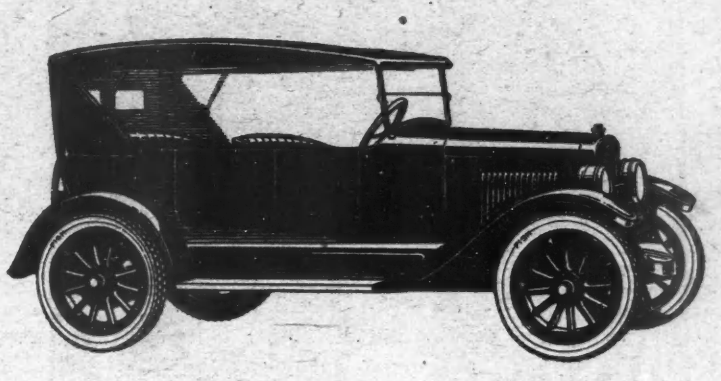

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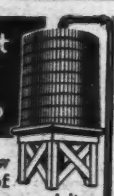
Water Without Pumping Plenty of It Too



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No skilled labor required to install it. Over 20,000 in daily use. Satisfaction guaranteed. Write today for catalog and

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Better Home Lighting

by E. W. Lehmann

BETTER home lighting is not only to safeguard the eyes and make the mother in the home more efficient in her household work, but also to add to the attractiveness and beauty of the home. Good lighting promotes cleanliness and sanitation, it makes the home bright and cheerful, thereby adding to the comfort and satisfaction of home life. No home is complete unless its lighting is carefully planned. However, there are many well built homes that are poorly lighted, even in the cities where electric power is available, because of improper selection and improper placing of fixtures.

Short-sightedness in children is a rather common defect and is due principally to poor lighting. That farm homes have poorer lighting than city homes is evidenced by the fact that a much larger per cent of the country school children have defective vision than city children. In New York State the Health Department found 21% of the country children had defective vision and only 5% of the city children were so afflicted. When a child reads by a poor light, the eyes are strained, and there is a tendency to hold the book too near the eyes and near-sightedness is the result.

A large per cent of the farm homes still use the kerosene lamp for lighting. While this method of lighting has considerable merit it also has a good many disadvantages, chief of which are: the odor is very unpleasant; it requires a great deal of attention; it develops a great deal of heat; smoke settles in the house; and the most important disadvantage, it gives a poor light. The need for a good inexpensive light has been met by the development of improved types of kerosene and gasoline gas lamps which are much more efficient as sources of light than the old-fashioned lamp. A poor type of kerosene lamp is often the most objectionable. This sort of lamp is often bought because it is a cheap source of light, but in the end it may prove very expensive if the eyesight of some one in the family is affected.

The effect of better lighting in increasing the efficiency has been clearly demonstrated in the industries. The productiveness of many workers has been greatly increased by simply increasing the intensity of light used. In some cases, a change in the position of the light or the type of deflector will give the desired effect. The same will apply in the home. Much time would be saved and more effective work accomplished in our homes by better lighting. The preparation of food, sewing and the care of the house and family all need adequate light for best results. Good light is bound to promote cleanliness which is very essential in food preparation. The kitchen has been rightly called the farm woman's workshop. This workshop needs to be carefully lighted both naturally and artificially. Two window exposures are desirable, general illumination should be provided and special lighting provided at the sink and work table.

House cleaning is made easier when the dirt can be seen. Many houses have too few windows. Proper artificial lighting also should be considered for every room.

Every housewife has considerable sewing to do. This requires good light and a lamp of some sort must be depended on. If the light is poor the eyes will be unduly taxed and a severe headache will result. In many homes the busy mother can be seen taking up her sewing or darning after the supper dishes are done. Often times the work must be laid aside before the task is completed due to the effect of inadequate light.

There is nothing that adds more to the beauty of a room than proper lighting. The attractiveness of lighting is permanent due to its utility value. There is bound to be greater contentment and more satisfied home life where the gloom and semi darkness is dispelled by plenty of light.

In building a modern home as careful planning should be given to lighting as to heating or providing an adequate water supply. The problem of securing good lighting is best solved by giving careful attention to the following three requirements for good lighting: Light of suitable quality must be provided; the light must come from the proper direction; the light must be of correct intensity.

A bright glaring light is objectionable. A light must be judged by how it helps one to see. An improperly placed light might hinder rather than aid the sight. To have a very intense light is often poor economy and dangerous to the eyesight.

There are a few don'ts that every one might well keep in mind. Don't judge the value of lighting by the brightness of the lamps, but by the way it illuminates objects and makes them easier to see. Don't use a flickering light. It causes eye strain and headache. Don't use dazzling or glaring light in the line of vision. The eyes cannot adjust themselves. Don't face the light when reading. The light rays are deflected into the eyes, which is objectionable. The light should always come from above and over the left shoulder. Don't have local illumination where general lighting is needed, or have general where local is needed. In most of the rooms of the house there is a need for both general and special lighting.

When so much money is being spent for all sorts of equipment on the farm the lighting of the home must not be overlooked. There is also a very definite need for better lighting of the farm buildings as well as the house. Much time would be saved and much danger eliminated by having the barns and other work buildings equipped with adequate lights that are safe and ready for instant use.

Orange Exports

Spain, Italy and the United States are the heaviest exporters of oranges, according to reports to the United States Department of Agriculture. In 1920 and 1921 Spain exported 7,000,000 boxes and 12,000,000 boxes, respectively, as compared with 16,000,000 boxes in 1913. Shipments from Italy for both 1920 and 1921 were close to 3,000,000 boxes, this amount being only a little less than for the pre-war year 1913. In 1921 the United States exported over 2,000,000 boxes, or more than double the exports in 1913, and 45 per cent more than the exports in 1920. Imports into the United Kingdom were about the same in 1921 and in 1913, or approximately 8,000,000 boxes. The imports into France amounted to 3,000,000 boxes for both of these years.

Jelly Making in the Home

by Hazel Bursell

JELLY making is one of the most important means of caring for surplus fruits and at the same time providing the family with delicious foods for the long winter months. Yet in no department of preserving does the average housekeeper feel less sure of her results than in jelly making. The rule works perfectly one time and seems to fail another.

"Why doesn't my jelly harden?" "What causes my jelly to candy?" are two questions being constantly asked.

It is an easy matter to say that there is something in the condition of the fruit, or that the fruit juice and sugar were cooked too short or too long a time. These explanations are often true, but they do not help the housekeeper one bit in solving her problem. We have to go deeper and study the underlying principles of jelly making.

Three Things Necessary.

Three things are necessary for jelly making—sugar, acid (has sour taste), and a substance in the fruit called pectin. This pectin is the most important of the three, as it is the ingredient that, when heated, causes the juice to gelatinize or "jell."

You have all found out from experience that certain fruits such as peaches and strawberries, won't make jelly. The reason for this is that they are almost entirely lacking in pectin. So, to have a jelly with these flavors we mix the juice with the juice of some other mild-flavored fruit rich in pectin, as currants or apples.

Slightly under ripe fruits contain more pectin than ripe ones, and therefore we should never select "dead ripe" fruits for jelly. The pectin changes as it ripens to another substance called pectase and this does not have the "jellying power."

Fermentation Destroys Pectin.

Fruit juice loses the ability to jell when it ferments. A long, slow cooking process after the sugar has been added also changes the pectin, so that it loses much of this quality. This means that speed in cooking is essential to good jelly.

Fruits vary as to the quantities of sugar, acid and pectin in their composition. Some of the sour fruits contain more sugar than do some of the milder-flavored fruits. Currants, for example, often contain four or five times as much sugar as peaches, but the latter have less free acid. An acid fruit is more desirable for jelly making, though some of them are lacking in pectin.

Here is a list of the most desirable fruits for jelly. The very best are given in the first column:

Currant	Loganberry
Crab apple	Blackberry
Apple	Peach
Quince	Plum
Grape	Pear
Raspberry	Cherry

The first step in jelly making, then, is to pick and select the fruit. Juicy fruits, such as currants, raspberries, etc., should not be gathered after a rain, for they will have absorbed so much water as to make it difficult, without excess boiling, to get the juice to jell. Remove the stems, leaves, etc., though the smaller stems on currants do no harm.

If the berries are sandy or dusty it will be necessary to wash them, but the work should be done very quickly so that the fruit may not take up extra water. The best method is to place the fruit in a colander and run water over it.

Use a Granite Kettle.

The next problem is to get the juice out of the fruit. Most fruits should simmer slowly on the stove till the fruit is tender, then the juices come out easily. The large fruits should be cut up in smaller pieces, and may or may not be pealed. A granite kettle with a tight-fitting lid is preferable, as the juices will not discolor, nor will the flavor be tainted. Do not allow the fruit to actually boil in this stage, as some of the pectin may be ruined.

No water will be required for the juicy fruits, but some of the others will need added liquid in this stage. If you have gathered the juicy fruit when it is a little underripe you may be sure that it contains the right proportion of water.

It is essential that just enough, and no more, water than is necessary be added in this first cooking—extra water means extra work for nothing. The following table as to amount of water required is reliable, but it must be remembered that if the season is wet less water should be added.

Amount of Water Allowed to Each Pound of Fruit for Jellies, Jams and Marmalades.

Proportion of water.	Fruit.
1 cupful to 1 pound	Apple
½ cupful to 1 pound	Apricot
½ cupful to 1 pound (Same for other berries.)	Blackberry
½ cupful red currant juice to each pound to make it jell	Cherry
None	Currant, red
¼ cupful to 1 pound	Currant, black
None	Damson plums
None	Grape, unripe
½ cupful to 1 pound	Greengage
½ cupful to 1 pound	Gooseberry
None	Plum
Enough to cover bottom of pan	Quince, apple
None	Raspberry
½ cupful to 1 pound	Strawberry
½ cupful to 1 pound	Rhubarb
½ pint to 3 pounds	Marrow

Materials to Assemble.

Now that we have the fruit on to simmer, we should get all our other materials ready, so that we can work efficiently when we start the actual jelly making.

Sugar—Sufficient for your needs. For exhibition jelly it would pay to arrange to warm the sugar just before it is put in the hot juice, as speed is a big factor in perfect jelly.

Utensils Required.—Wooden spoons for stirring. Cotton bag, coming down to a long point at the bottom for straining the juice. Jelly glasses—May use any small, clean containers that you have on hand. Empty cold cream jars of white porcelain will be found very satisfactory when cleaned of paper and sterilized. Pan of hot water to set glasses in while hot jelly is being poured into them. Measuring cups for juice and sugar, both the same size. Covers and rubbers for screw-top jars. Lids for glasses. Paraffin or heavy paper and egg-white for covering lidless glasses. Labels—to indicate the kind of jelly and date of putting up. Saucer to lay spoons on when not in use. All utensils must be perfectly clean. Jars must be freshly cleaned and scalded. Jelly bags must be sterilized.

Wood.—Fine, dry wood that will make a quick blaze, as well as some heavier to hold the fire.

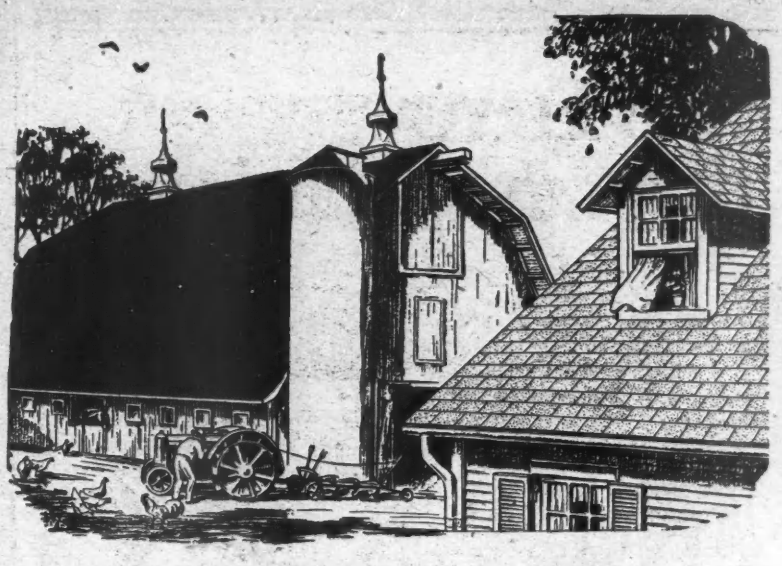
Strain Juice Through Bag.

Now we are ready to proceed with the jelly making. Crush the fruit that is simmering in the kettle and pour it into the jelly bag to drain off the juice. Do not squeeze the bag or the jelly will be "cloudy" from particles of pulp. Patented racks for holding the jelly bag may be purchased or one may be improvised from a broom handle laid between two straight-topped chairs.

Measure the strained juice and put into the preserving kettle, not more than four cups and for exhibition jelly only one cup, to the kettle at one time. Place the kettle directly over the flame, and boil steadily, skimming often.

Add the sugar warmed, the general proportions being ¾ cup of sugar to one of fruit juice, though a very acid fruit may require a "1 to 1" proportion of juice and sugar. The writer has found ¾ cup to one of juice sufficient in every case. Too much sugar gives a "sickeningly sweet" jelly.

A granite pie-pan in the oven, containing the measured sugar, is the



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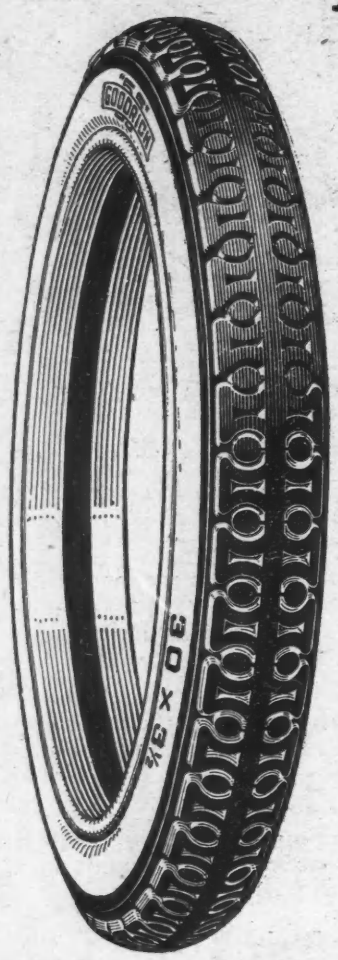

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most satisfactory method of warming the sugar.

Should Boil Rapidly.

After the sugar is dissolved, put the kettle over the fire and boil very briskly—here's where the fine wood comes in—till the bubbles come a little slower. Skim as fast as the foam boils up. Try the juice with a spoon, and the instant it begins to jell when cooled, remove from the fire and pour in the hot, sterilized glasses.

I can not emphasize too strongly the necessity for not cooking the jelly too long—that is exactly what makes hard, tough, leathery jelly with a strong flavor. You'll be surprised at how little cooking is really required to make lovely, "quivery" jell. With one glass to the kettle, I have often cooked it in about three minutes, but of course more juice takes longer. The bubbles in the glass will rise to the top only if the jelly is poured before it is too stiff, and bubbles through the jelly spoil its appearance.

Certain fruits, such as the currant, will jell in the sun. Dissolve the sugar in the hot juice and pour the juice in the warmed glasses, then set in a sunny window. This is a popular method with the modern housewife.

For exhibition jelly I would strain the juice three times through a sterilized bag—once to remove the pulp, once just before measuring, and once after the sugar has been added. Thus I make sure that every particle of pulp and fleck of dirt from the sugar has been removed. Again I remind you that the greater the speed in handling the cooking, the better the color and flavor. With proper handling apple jelly can be made almost colorless. Did you know that?

When a fruit will not jell by itself, other juices can always be combined with it, often to give a most delicious flavor. Some of the favorite combinations are:

Raspberry and currant, using half currant and half berry juice. Apple being mild-flavored, may be seasoned with a variety of fruits, flowers, spices, and mints. Apple and quince is an old favorite. Apple and peach, apple and peach plum, currant and strawberry, apple and strawberry, apple and pear.

Need Heavy Paraffin Coat.

Now that our jelly is cold and firm, our next problem is covering it to keep out molds. A heavy coating of paraffin, at least one-fourth of an inch thick, is perhaps the easiest way. The wax should be put on as soon as the jelly is cold, as mold spores will light on it, if allowed to stand. The wax will shrink some, so it should not be put on too thin or it will crack.

The method of our grandmothers still holds good if we can get the "stuff" to do it with. Have disks of thick white paper the size of the top of the glass ready. Brush the top of the jelly over with brandy or alcohol. Then dip the paper in the spirits and put it on the jelly. If the glasses have tin lids put them on. If not, cut disks of paper larger than the top of the glass, and seal it on for a lid with the white of an egg, beaten with a little water. Paper may be tied over the top, if the housekeeper prefers.

Things to Remember.

A few "Things to Remember," then, for jelly making are: Observe the strictest cleanliness. Use fresh, slightly under ripe and dry fruit. Do not "boil" the fruit to get the juice out—let it simmer slowly. Do not squeeze the jelly bag, if you wish clear jelly. Allow ¾ c sugar to 1 c juice, and add the warmed sugar to the hot juice. Boil continuously and fast, over a brisk, steady fire. Do not have more than four cups in the kettle at once—one is better for the best results. Take it off the fire as soon as you think it will possibly "jell" when cooled. Pour in sterilized glasses, cool and seal. Store in a cool, dry place.

Tests for Perfect Jelly.

Every housekeeper should know how to score her own jelly—then she will know when it is or isn't perfect and can strive to make it "better and better" each year.

Here are the tests for good jelly:

Good jelly will be clear and transparent, free from specks or bubbles. It will be tender, and a pen-knife will sink into it by its own weight. When cut the edges will be clean-cut and sharp. It will stand alone, but quiver. It will have the flavor of the fruit from which it is made, and will not be "strong." It will not be sticky or gummy; not brittle, but will break.

New Strawberries Give Promise

HORTICULTURISTS at the New York Agricultural Experiment Station at Geneva, through the New York State Fruit Testing Co-operative Association, Inc., are introducing three new strawberries, the Beacon, the Bliss, and the Boquet, developed on the Station grounds, which give unusual promise for the garden or for commercial plantings. The three varieties cover almost the entire strawberry season in New York, Beacon being an early sort, Boquet an early mid-season variety, and Bliss a late mid-season variety. All three varieties have been thoroughly tried out on the Station grounds and are highly recommended by the Station authorities for trial by strawberry growers.

The New Varieties.

Beacon, said to be one of the best early strawberries, ripens with Dunlap, long a standard early kind. It is described as drought resistant, productive, and of excellent quality. In five out of the last six years, the fruits of Beacon were rated as the handsomest of their season on the Station grounds. Boquet, ripening about half way between Beacon and Bliss, is characterized by large, light red berries of sweet, rich flavor. The fruit ships and keeps well, and the variety is highly recommended as a mid-season, main crop, market berry. The plants are said to be vigorous, productive, and healthy, but do not develop as many runners as is desirable for rapid propagation. Bliss, a late mid-season variety, produces large, handsome, bright red berries of excellent flavor and quality. The plants also stand high among commercial varieties because of their ability to yield well under adverse weather conditions, say the fruit specialists. It is believed that all three of these new varieties are well worth a trial, at least on a small scale, both by the amateur gardener and by the commercial grower.—N. Y. Agri. Exp. Sta.

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FOR SALE—TWENTY ACRE APPLE ORCHARD, Crawford County, Wisconsin. Ninth growing season. Write "Owner," 523 E. Gorham St., Madison, Wis.

GARDEN TRACTORS, MIDWEST UTILITOR, walking or riding type. Special offers. Prepaid freight. Midwest and Planet, Jr., implements. Write. John H. Owen, Box B-1111, Savannah, Ga.

Eastern Fruit Growers Will Fight

By Herschel Jones

EASTERN fruit growers will shortly launch a campaign to meet the dominating competition of western apples upon eastern markets. Plans are already under way for a mammoth eastern apple exposition and fruit show in New York City next fall. Representatives of Eastern Fruit Growers' Associations, State Departments of Agriculture, State Colleges and also large individual growers from the Middle Atlantic and New England States met recently in New York City to plan the ways and means to meet the inroads of western fruits.

The central feature of the proposed advertising and publicity campaign will be the exposition which is to be held in the Grand Central Palace and will be called the Harvest Festival Exposition. It will bring to New York City the products of the finest orchards of the East and will demonstrate to eastern consumers the superiority in flavor and quality of the eastern fruit.

The committee planning the exposition is headed by Thomas E. Cross, of Lagrangeville, New York, formerly President of the New York State Horticultural Society; Mr. A. W. Lombard of the Massachusetts Department of Agriculture of Boston is Vice-Chairman, and Mr. H. C. C. Miles, Secretary of the Connecticut Pomological Society, Milford, Connecticut, is the secretary of the Committee. Various state marketing bureaus are taking an active part in the movement. The Committee will meet in New York City on April 10th to complete the details of their plans for the exposition. Eastern financial, industrial and commercial organizations and individuals interested in the consumption and marketing of eastern grown fruit will be invited to assist.

In conjunction with the plans for a big apple show state committees are being formed in each of the eastern apple growing states to conduct advertising and publicity campaigns in their respective states. Legislatures are being asked to appropriate funds to assist in the educational part of the exposition. The organized distribution of the western apples has crowded eastern apples off fruit stands and out of public eating places in the large eastern cities, according to Mr. Cross, Chairman of the Committee, and it is time that something be done by eastern apple growers to counteract the persistent advertising of western apples. Even in the heart of the finest apple growing sections of the country, in some cases within a few miles of the orchard, the public is forced to buy northwestern apples. Flavor and real quality have been lost sight of in the desire of the retailers for uniformity of size and packing.

In addition to the officers mentioned above the Committee which is arranging for this publicity campaign includes the following: Thomas E. Cross, ex-President of the New York State Horticultural Society, Lagrangeville, N. Y.; Prof. M. A. Blake, head of Horticultural Department, New Jersey Agricultural College, New Brunswick, N. J.; Porter R. Taylor, Chief of State Bureau of Markets, Harrisburg, Pa.; C. L. Gold, Vice-President of the New England Fruit Show, West Cornwall, Conn.; Leslie R. Smith, Deputy Commissioner of Agriculture, Boston, Mass.; C. L. White, Chief, Bureau of Markets, State Department of Agriculture, Augusta, Me.; C. L. Witherell, Vice-President of the New England Fruit Show, Middlebury, Vt.; John J. Dunn, Secretary of Agriculture, Providence, R. I.; C. W. Barker, Vice-President of the New Hampshire Fruit Growers' Association, Exeter, N. H.; W. T. Derickson, Chief, Bureau of Markets, State Board of Agriculture, Dover, Del.; F. B. Bomberger, Assistant Director, Bureau of Markets, State Department of Agriculture, College Park, Md.; W. P. Masses, Secretary of the State Horticultural Society, Winchester, Va.; and W. H. Somers, Chief, Bureau of Markets, Charleston, W. Va.

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Protect your valuable papers, deeds, fire and life insurance policies, notes, mortgages, etc., with a Fulton Document Safe. Unlike the ordinary document box, there are no keys to lose or locks to pick. Instead it has a three tumbler combination lock which only the owner can operate. It is made of Bessemer Steel, finished in black enamel, size 11½x5½x2¼, and is as attractive in appearance as it is practical.

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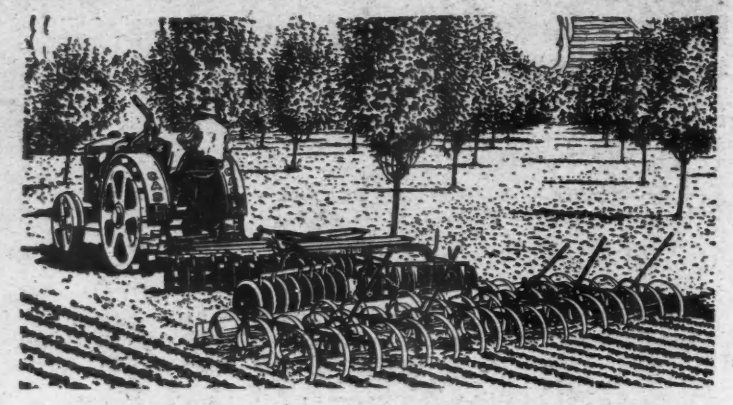
AMERICAN FRUIT GROWER MAGAZINE, 53 West Jackson Blvd., CHICAGO.



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Case farm tractors have many advantages for orchard work. They furnish dependable power for the thorough, frequent cultivations needed. They operate with extreme economy. Their durability reduces the yearly cost of orchard care to a very low figure. They are adapted to every kind of power work required in modern orchard operation.

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J. H. Hale Peach

IN VIEW of the fact that so many growers are planting the J. H. Hale peach, and in some cases large blocks of it, it is well to call attention to one of its weaknesses, says Paul Thayer, extension pomologist at the Pennsylvania State College. The rather erratic behavior of this variety has been noticed quite generally. At times it gives a full crop of very large, handsome peaches. In other instances it has borne only a scattering of superior-sized peaches along with many small-sized fruits. This led to the belief that the J. H. Hale, unlike many other sorts, might not be perfectly self-fertile. Upon investigation, the New Jersey Experiment Station found that such was the case, and growers who wish to plant this variety are urged to provide cross-pollination with some other good variety.
State College News.

United States Production and Imports of White Arsenic

Year.	Production. (In short tons).	Imports.
1912	3.141	3.103
1913	2,513	1.519
1914	4,670	1,594
1915	5,498	1.400
1916	5,986	1.071
1917	6.151	1,178
1918	6.223	1,847
1919	6.029	4,389
1920	11.502	3.740
1921	5.732	1,669
1922	10,947	(*)

*Not available.

Pruning Peaches

MANY peach growers wait until they know whether they will have a crop before completing the pruning of their peach trees. It is generally necessary to take out from one-third to one-half of the new wood produced on the vigorous trees. However, where there is a very heavy crop considerable pruning can be done to help thin the fruit. Where the crop is rather light and scattered, however, it is customary not to prune quite so heavily in order to save the crop. Where the trees have lost their crop, it is the best way to put the trees in excellent condition by giving them a heavy pruning.

Grafting Wax

Many growers are successful in cutting scions and placing them successfully, but later are disappointed that these scions do not grow or if they start to grow, afterwards wilt and die. This is due to the fact that the scions dry out and the waxing is poor. A few weeks after the grafting the wax should be examined to see if air holes or pockets have developed in the wax. If so, the wax can be smoothed down by the hand or another application of wax can be applied, using a wax somewhat more liquid than the first so that it will fill in any holes.

California Walnuts

(Continued from page 7.)

conditions, may continue to be a satisfactory source of revenue until the trees are from 50 to 200 years old. Some of the oldest walnut groves in Venturi county are the most profitable and productive in the state. Notable examples of such old, yet productive groves, are the J. C. Daly grove of 20 acres planted in 1881; 18 acres of the J. M. Sharp grove planted in 1887; and the T. A. Kelsey grove of 26 acres planted in 1888. The last mentioned grove has only 12 trees to the acre, planted 60 feet apart each way. The trees at their present age in the above groves show no apparent deterioration. The Kelsey grove has produced an average annual tonnage of 1,941 pounds of nuts per acre during the past four years. Groves in which the trees are planted 60 feet each way may be expected to grow longer without deterioration than groves where the trees are planted closer and thus severely compete with each other.

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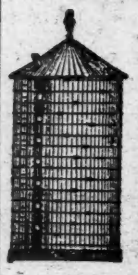
SIMPLEX Water Works System

Built in all sizes for all purposes. Shallow or deep well sources of supply can be operated by Hand Power, Gasoline Engine, or Electric Motor. This Hand Power outfit for shallow well supply, complete for $59.00.



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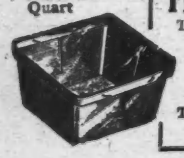

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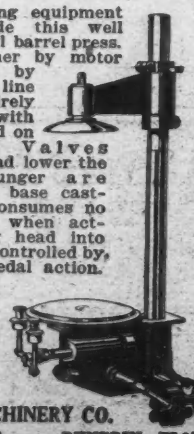

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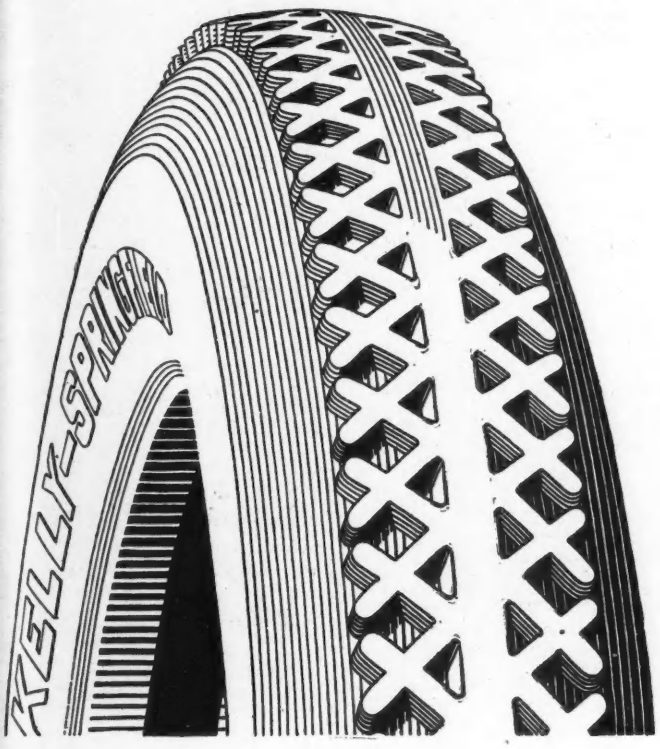

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